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ABSTRACT

This instructional manual consists of 11 competency-based units for a mathematics course for trade and industrial programs in Texas. Each instructional unit includes the following basic components: unit and specific objectives, notes to the instructor (outline of steps to follow in accomplishing specific objectives), information sheets, transparency masters, activity sheets, pre/post and unit tests, and answers to the activities and tests. Each unit is planned to cover more than one lesson or period of instruction. Unit topics are numeration, adding whole numbers, subtracting whole numbers, multiplying whole numbers, dividing whole numbers, fractions, decimals, percents, measurement, time and pay, and making change. (YLB)

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TI-289-TG

Self-Contained Math Manual

Teacher's Guide

Prepared by
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Published by
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TABLE OF CONTENTS

Acknowledgments v

Preface vii

Introduction ix

Use of the Instructional Units xi

Unit

I. Numeration 1

II. Adding Whole Numbers 85

III. Subtracting Whole Numbers 155

IV. Multiplying Whole Numbers 205

V. Dividing Whole Numbers 273

VI. Fractions 341

VII. Decimals 505

VIII. Percents 621

IX. Measurement 703

X. Time and Pay 921

XI. Making Change 961

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PREFACE

The Self-Contained Math Manual was prepared to provide quality instructional materials for Vocational Education Trade and Industrial programs in Texas. The Occupational Curriculum Laboratory is currently developing and disseminating competency-based materials under contract with the Texas Education Agency for both secondary and postsecondary programs. All publications and instructional materials are developed by curriculum specialists who are experienced in curriculum development and are validated for technical content by business and industry before field-testing by teachers and students across the state.

This manual, along with Learning Activity Packets for General Construction Trades, Metal Trades, Mechanical Repair, and Building Maintenance, all produced by the Occupational Curriculum Laboratory, serve as an excellent basis for achieving the Trade and Industrial program goals as mandated by the Texas Education Agency. The purpose for developing these instructional materials is to make them easily usable by both the teachers and the students; therefore, suggestions and comments about this instructional manual are requested.

INTRODUCTION

This manual has been developed for the Trade and Industrial programs in Texas. In addition, four Learning Activity Packets have been developed to reinforce the information found in the manual.

Beginning with the basics of math, these materials were developed using a step-by-step process which takes the student from identifying numbers to figuring their time and pay.

Each instructor is encouraged to use the pre/post test in assessing each student's knowledge level, allowing the student to work in areas where assistance is indicated. We believe that on completion of all units in the Self-Contained Math Manual, the students will have a working knowledge of math which may then be applied to their occupational area.

It is suggested that the teacher wishing to use this instructional manual first read the "Use of Instructional Units" before beginning any instruction. The "Notes to the Instructor" contained in each unit of instruction should also be read carefully so that additional supplies and outside resources needed for completion of the unit can be secured.

8

USE OF THE INSTRUCTIONAL UNITS

INSTRUCTIONAL UNITS

Each instructional unit includes the following basic components: objectives, notes to the instructor, information sheets, transparency masters, activity sheets, tests, and answers to the activities and tests. Each unit is planned to cover more than one lesson or period of instruction.

Previewing the unit before the lesson will help the instructor to determine:

A. The amount of material to be covered in each class period

B. Supplemental materials that must be ordered or secured

C. Resource people who must be contacted

D. The teaching sequence for the information and the activities

E. The subject areas that he/she wishes to cover

OBJECTIVES

Each unit of instruction is based on performance objectives. These objectives state the goals of the program, thus providing a sense of direction and accomplishment for the student.

Performance objectives are stated in two forms: unit objectives, which state the terminal performance expected of the student upon completion of the unit, and specific objectives, which are those performances that will help the student to master the unit objective.

Since the objectives of the unit provide direction for the learning process, it is important for the teacher and students to discuss the objectives prior to covering the information in the unit. This discussion will provide a common understanding between teacher and student of the intent of the objectives. Performance terms have been used in all objectives of the units to assist in promoting the effectiveness among all individuals using the materials.

Teachers should feel free to delete or add objectives to tailor the material to the needs of the students and the program. When objectives are added, corresponding information sheets, activities, and tests should be designed and constructed.

NOTES TO THE INSTRUCTOR

Each unit provides a "Notes to the Instructor" section outlining steps to follow in accomplishing specific objectives. The instructor should carefully preview this section prior to any lesson, making additional notes that would assist in conveying the information to the students.

In addition, the instructor should select, sequence, or modify any information and activity sheets deemed necessary for the local teaching situation. Arrangements should be made and supplies should be assembled as required for any activity sheets selected.

Instructors are strongly encouraged to use any additional instructional activities, methods, and references that would aid in accomplishing the objectives.

ANSWERS TO ACTIVITY SHEETS AND TESTS

Answers for activities and tests are provided directly after the "Notes to the Instructor" and may be used by the teacher for checking student achievement of the objectives. Many of the activities are geared more to student participation and must be evaluated to the satisfaction of the instructor.

PRE/POST TESTS

Each pre/post test is divided into parts which cover information provided in one information sheet. It is recommended that the student be given the Pre/Post Test at the beginning of each unit of instruction. Based upon scores from the Pre/Post Test, the instructor may: have the student study the entire unit; have the student study only the information sheets covering parts of the Pre/Post Test with which the student needs help; or if the student scores well, have the student complete the activities related to that unit of instruction from the specific trade or Learning Activity Packet.

INFORMATION SHEETS

Information sheets provide content essential for meeting the cognitive (knowledge) objectives of the unit. Information may be presented in two ways: 1) The instructor may use the information sheet as a guide for presenting the background knowledge necessary for the students to complete the specific objectives and ultimately the unit objective, or 2) Students may be allowed to read information sheets before, or as information is discussed in class. Students should take not on any additional information presented.

TRANSPARENCY MASTERS

Transparency masters present information in a special way. The student may see as well as hear the material being presented, thus reinforcing the learning process. Transparencies may present new information, stimulate discussion, or reinforce information presented in the information sheets. They are also very effective when identification is necessary.

Transparencies should be made from the masters and placed in the teacher's notebook where they will be readily available for use. Transparencies will direct attention of the class to the topic of discussion as well as generate other thoughts for discussion.

ACTIVITY SHEETS

Activity sheets provide direction to study and also provide application and reinforcement of cognitive materials presented. An effort has been made to incorporate the following elements of the learning process: translation, interpretation, application, analysis, synthesis, and evaluation so that the learning style of each student will be recognized.

The activity sheets may be given to the students for completion in class or may be used as homework assignments. Answer sheets are provided which may be used by th teacher and/or student in checking student progress.

The instructor should preview the activity and "Notes to the Instructor" sheets prior to making student assignments to assure that information has been covered and all supplies required are available. Class time should be set aside for those that require group participation. Those activities that require student participation rather than written answers should be evaluated to the satisfaction of the instructor.

TEST

Written tests are provided to measure students' understanding of the information covered in each information sheet. Individual test items may be used as a pre-test measure or as a review oral quiz to assist the instructor in spotting difficulties being encountered by students in their efforts to accomplish the unit objective. The individual tests over the information sheets may also be grouped as a semester or unit test. The instructor should construct additional test items for any objectives and information added to the unit.

UNIT I

NUMERATION

UNIT OBJECTIVE

After completion of this unit the student will be able to read and write numbers, order them according to value, round off a number to the nearest 10, 100, 1,000, or 10,000, and distinguish between an even number and an odd number. This knowledge will be evidenced through demonstration and successfully completing the unit test.

SPECIFIC OBJECTIVES

In completing this unit of instruction, the student will:

1. Orally or in writing match word forms of numbers with the correct numeral
2. Write numerals given an oral or written list of number words
3. Write number words given an oral or written list of numerals
4. Name the place value of digits in a number when given an explanation of "place value" and "face value"
5. Round off a list of numbers to the nearest 10, 100, 1000, or 10,000
6. Distinguish between an even number and an odd number

UNIT I

NUMERATION

NOTES TO THE INSTRUCTOR

I. Objective Sheet

   A. Discuss the unit objective with the students.

   B. Discuss each specific objective with the students.

   C. Have the students complete the objectives in a sequence best suited to your classroom.

   D. Add any objectives necessary to meet fully the needs of the unit and the students.

II. Pre/Post Test

   A. The Pre/Post Test may be used to determine the students' knowledge of information prior to beginning the unit.

   B. The Pre/Post Test is divided into parts to correspond with each Information Sheet.

      1. The student may not need to cover each Information Sheet.

      2. The teacher may use the test to determine the area of information with which the student may need help.

   C. The Pre/Post Test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

   A. INFORMATION SHEET 1--TERMS AND DEFINITIONS

      1. Stress to the students the importance of understanding the terms used in working with numeration.

      2. Use ACTIVITY SHEET 1-- CROSSWORD PUZZLE to reinforce this area of instruction.

   B. INFORMATION SHEET 2--NUMBER VALUES

      1. Explain that we have only ten symbols in our number system.

      2. Show TM-1--IN OUR NUMBER SYSTEM WE HAVE TEN SYMBOLS to reinforce this area of instruction.

      3. Explain that each of the symbols in our number system is termed a digit.

4. Explain the meaning of each column name.

5. Explain the meaning of place value.

6. Explain the meaning of face value.

7. Explain the meaning of actual value

8. Show TM-2--NAME AND VALUES to reinforce this area of instruction.

9. Use the following Activity Sheets to meet fully the objectives of this unit:

   a. ACTIVITY SHEET 2--IDENTIFYING NUMBER POSITIONS

   b. ACTIVITY SHEET 3--NAME AND VALUES

   c. ACTIVITY SHEET 4--FACE AND PLACE

C. INFORMATION SHEET 3--MATCHING WORD FORMS AND NUMBER FORMS

1. Explain the use of the comma to punctuate numbers.

2. Show TM-3--NUMBER PUNCTUATION to reinforce this area of instruction.

3. Discuss the importance of knowing how to spell word forms of numbers.

4. Use the following Activity Sheets to meet fully the objectives of this unit:

   a. ACTIVITY SHEET 5--SPELLING WORD FORMS

   b. ACTIVITY SHEET 6--WHAT IS THE NUMBER?

   c. ACTIVITY SHEET 7--WHAT IS THE WORD FORM?

D. INFORMATION SHEET 4--ROUNDING NUMBERS

1. Explain the process used in rounding off numbers.

2. Use TM-4--ROUNDING OFF NUMBERS to reinforce this area of instruction.

3. Use the following Activity Sheets to meet fully the objectives of this unit:

   a. ACTIVITY SHEET 8--ROUNDING TO THE NEAREST 10

   b. ACTIVITY SHEET 9--ROUNDING TO THE NEAREST 100

   c. ACTIVITY SHEET 10--ROUND AND ADD

      (NOTE: Discuss which column was easier to add and why. Also discuss the need for rounding (particularly with respect for students in vocational education).)

   d. ACTIVITY SHEET 11--ROUNDING TO THE NEAREST 1,000

e. ACTIVITY SHEET 12--ROUNDING TO THE NEAREST 10,000

E. INFORMATION SHEET 5--DISTINGUISHING BETWEEN EVEN AND ODD NUMBERS

1. Explain why a number is considered even.
2. Show TM-5--EVEN NUMBERS to reinforce this area of instruction.
3. Explain why a number is considered odd.
4. Show TM-6--ODD NUMBERS to reinforce this area of instruction.
5. Use the following Activity Sheets to meet fully the objectives of this unit:
    a. ACTIVITY SHEET 13--IDENTIFY THE BLOCKS
    b. ACTIVITY SHEET 14--WHICH IS WHICH
    c. ACTIVITY SHEET 15--WORD NUMBERS ODD OR EVEN
    d. ACTIVITY SHEET 16--DOMINOES - ODD OR EVEN

IV. Answers to Pre/Post Test

A. Answers are based on total information covered in this unit.

B. Right and wrong answers may assist the teacher in discovering individual weaknesses.

V. Answers to Activity Sheets

A. Some of the Activity Sheets will vary according to training and should be graded individually.

B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

A. The Unit Test is divided into five parts.

1. Each part covers one Information Sheet.
2. Each part uses various methods of testing.

B. Various approaches may be used in testing.

1. Give each part of the test after the student has completed the information in one information area or sheet.
2. Give the entire test upon completion of all the Information and Activity Sheets.
3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

b

C. Add test parts corresponding to any information areas or sheets added to the unit.

VII. Answers to Unit Tests

A. Answers are based on total information covered in the unit.

B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

A. Bitter, Gary G. et al. McGraw-Hill Mathematics K-8. New York: Webster Division, McGraw-Hill Book Company, 1981.

B. Deans, Edwina et al. Exploring Mathematics. New York: American Book Company, 1963.

C. Goozner, Calman. Arithmetic Skills Workbook. New York: AMSCO School Publications, Inc., 1973.

UNIT I

NUMERATION

ANSWERS TO PRE/POST TEST

A. 1. i
2. a
3. f
4. c
5. e
6. k
7. g
8. h
9. d
10. b
11. j

B.

	Digit	Column Name	Place Value	Face Value	Actual Value
1.	3	hundreds	100	3	300
	9	tens	10	9	90
	2	ones	1	2	2
					392

2. 5,321
3. five
4. 100
5. hundreds

C. 1. B
2. A
3. three
4. 3,078
5. four thousand three hundred twenty-one

D. 1. 50
2. 370
3. 1,500
4. 1,000
5. 600

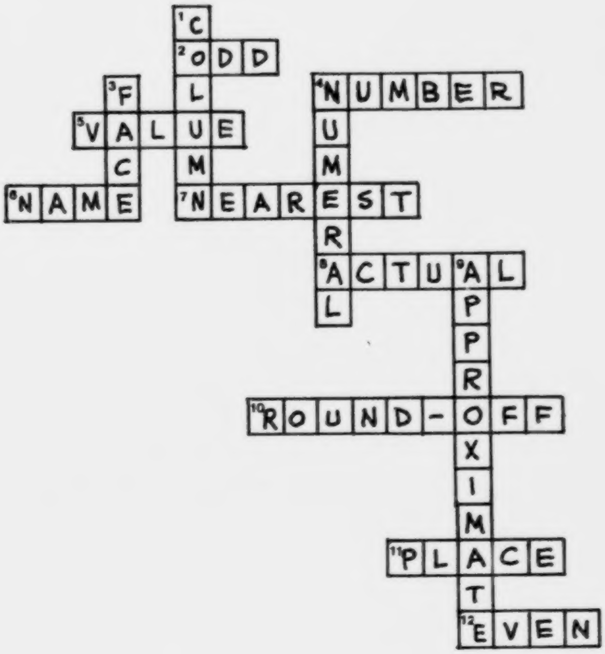
E. 1. odd
2. odd
3. even
4. even
5. odd

UNIT I

NUMERATION

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1



1 COLUMN
2 ODD
3 FACE
4 NUMBER
4 NUMERAL
5 VALUE
6 NAME
7 NEAREST
8 ACTUAL
9 APPROXIMATE
10 ROUND-OFF
11 PLACE
12 EVEN

ACTIVITY SHEET 2

1. 5,③26
2. 4,9①7
3. 6,42①
4. ③,073
5. ⑦9,206
6. ⑦39,863
7. 16,0⑨1
8. 82,62⑧
9. 73,⑤75
10. 12,4②9

ACTIVITY SHEET 3

(1)	5 thousands	1,000	5	$5,000
	7 hundreds	100	7	700
	6 tens	10	6	60
	2 ones	1	2	2
				$5,762

(2)	2 thousands	1,000	2	$2,000
	6 hundreds	100	6	600
	7 tens	10	7	70
	5 ones	1	5	5
				$2,675

10

(3)	4 thousands	1,000	4	$4,000
	5 hundreds	100	5	500
	3 tens	10	3	30
	7 ones	1	7	7
				$4,537

ACTIVITY SHEET 4

1.

two	1
six	10
five	100

five hundred sixty-two

2.

eight	1
four	10
three	100

three hundred forty-eight

3.

seven	1
zero	10
six	100

six hundred seven

4.

five	1
two	10
one	100
three	1,000

three thousand one hundred twenty-five

5.

three	1
four	10
six	100
eight	1,000

eight thousand six hundred forty-three

6.

two	1
zero	10
three	100
six	1,000
nine	10,000

ninety-six thousand three hundred two

7.

six	1
five	10
four	100
seven	1.000
eight	10,000

eighty-seven thousand four hundred fifty-six

8.

six	1
five	10
four	100
three	1,000
two	10,000
one	100,000

one hundred twenty-three thousand four hundred fifty-six

9.

five	1
zero	10
zero	100
six	1,000
zero	10,000
zero	100,000
four	1,000,000

four million six thousand five

10.

two	.10
zero	.1
two	1
three	10
five	100

five hundred thirty-two and two hundredths

11.

two	1
seven	10
three	100
four	1,000

four thousand three hundred seventy-two

12.

seven	1
two	10
five	100
six	1,000

six thousand five hundred twenty-seven

13.

six	1
four	10
seven	100

seven hundred forty-six

14.

one	1
two	10
nine	100

nine hundred twenty-one

15.

five	1
five	10
four	100
zero	1,000
one	10,000

ten thousand four hundred fifty-five

16.

seven	.1
three	1
two	10
four	100

four hundred twenty-three and seven tenths

17.

three	1
zero	10
zero	100
seven	1,000
three	10,000

thirty-seven thousand three

18.

two	1
one	10
zero	100
nine	1,000

nine thousand twelve

19.

two	.10
zero	.1
one	1
six	10
three	100

three hundred sixty-one and two hundredths

20.

seven	1
two	10
one	100
nine	1,000
one	10,000

nineteen thousand one hundred twenty-seven

ACTIVITY SHEET 5

Evaluated to the satisfaction of instructor

ACTIVITY SHEET 6

1. 275
2. 9,075
3. 326
4. 402
5. 666
6. 700.2
7. 917
8. 132.102
9. 879.44
10. 10,511

ACTIVITY SHEET 7

1. Six hundred fifty-five
2. Eighty-seven
3. Nine hundred thirty-four
4. Three hundred three
5. Five thousand four hundred eighty-one
6. Four thousand nineteen
7. One and two tenths
8. Thirty-four and sixty-seven hundredths

ACTIVITY SHEET 8

1. 60
2. 350
3. 510
4. 210
5. 200
6. 430
7. 680
8. 340
9. 1,740
10. 8,070

ACTIVITY SHEET 9

1. 300
2. 500
3. 900
4. 100
5. 700
6. 6,200
7. 3,400
8. 9,700
9. 10,300
10. 10,100

ACTIVITY SHEET 10

1. 700
2. 400
3. 800
4. 600
5. 400
6. 200
7. 600
8. 500
9. 800
10. 600

Total 5,608

Total 5,600

ACTIVITY SHEET 11

1. 4,000
2. 4,000
3. 3,000
4. 1,000
5. 1,000
6. 9,000
7. 6,000
8. 6,000
9. 8,000
10. 142,000

ACTIVITY SHEET 12

1. 80,000
2. 360,000
3. 280,000
4. 70,000
5. 6,440,000
6. 410,000
7. 420,000
8. 410,000
9. 10,000
10. 9,930,000

ACTIVITY SHEET 13

1. odd
2. even
3. odd
4. even
5. odd
6. even
7. odd
8. even
9. odd
10. even
11. odd
12. even
13. odd
14. even
15. odd
16. even

ACTIVITY SHEET 14

1. odd
2. even
3. odd
4. odd
5. odd
6. even
7. odd
8. odd
9. even
10. odd
11. odd
12. even
13. odd
14. odd
15. even
16. odd
17. even
18. even
19. even
20. odd

ACTIVITY SHEET 15

1. even
2. odd
3. even
4. even
5. odd
6. odd
7. odd
8. even
9. odd
10. even
11. even
12. odd
13. even
14. odd
15. odd
16. odd
17. odd
18. even
19. odd
20. even

ACTIVITY SHEET 16

Evaluated to the satisfaction of the instructor

UNIT I

NUMERATION

ANSWERS TO UNIT TEST

PART 1

1. i
2. a
3. f
4. c
5. e
6. k
7. g
8. h
9. d
10. b
11. j

PART 2

A. 1.

Digit	Column Name	Place Value	Face Value	Actual Value
3	hundreds	100	3	300
9	tens	10	9	90
2	ones	1	2	2
				392

2.

Digit	Column Name	Place Value	Face Value	Actual Value
6	hundreds	100	6	600
2	tens	10	2	20
9	ones	1	9	9
				629

B. 1. 31,⑦25
2. 3,90⑦
3. ④,796
4. 5,3②1

C. five

D. hundred or 100

E. hundreds

F. three

G. ten or 10

H. tens

I. 0 1 2 3 4 5 6 7 8 9

ANSWERS TO TEST

PART 3

A. 1. c
2. e
3. d
4. b
5. a

B. 1. three
2. twelve
3. forty
4. thirty

C. 1. 267
2. 3,078
3. 500.32
4. 10,312

D. 1. three hundred seventy-eight
2. two hundred ninety-seven
3. four thousand three hundred twenty-one
4. three and seventy-nine hundredths

PART 4

A. 1. 50
2. 20
3. 140
4. 370
5. 300

B. 1. 1,500
2. 3,300
3. 600
4. 1,000
5. 1,500

C. 1. 5,000
2. 7,000
3. 138,000
4. 1,000
5. 79,000

D. 1. 70,000
2. 140,000
3. 9,870,000
4. 370,000
5. 580,000

PART 5

A. 1. any even number
2. any odd number

B. 1. odd
2. even
3. odd
4. odd
5. even
6. even
7. odd
8. even
9. odd
10. odd

C. 1. odd
2. odd
3. even
4. odd
5. even

D. 1. odd
2. odd
3. odd
4. even
5. odd

UNIT I

NUMERATION

PRE/POST TEST

A. Match the following terms with their definition. Write the letter of the correct answer in the blanks at the left.

_____ 1. Actual value

_____ 2. Approximate

_____ 3. Column name

_____ 4. Even number

_____ 5. Face value

_____ 6. Nearest

_____ 7. Numeral

_____ 8. Odd number

_____ 9. Place value

_____ 10. Round off

_____ 11. Word number

a. nearly correct or exact

b. changing the actual value of a number to an approximate value

c. one of the sequence of natural numbers that are exactly divisible by two, beginning with two and counting by twos

d. a value depending on which column or place the number is in

e. what the number actually says

f. name given to the place or position of each numeral making up a number

g. relating to, or expressing numbers

h. one of the sequence of natural numbers that are not divisible by two, beginning with one and counting by twos

i. the face value of a number multiplied by its place value

j. a word which can be used to mean the same thing as a numeral

k. that closest to something

TEST

B. Fill in the box for each digit in the number given.

EXAMPLE: 573

Digit	Column Name	Place Value	Face Value	Actual Value
5	hundreds	100	5	500
7	tens	10	7	70
3	ones	1	3	3
				573

1. 392

Digit	Column Name	Place Value	Face Value	Actual Value
3				$
9				$
2				$

Add the Actual Values Together $_______

2. Circle the numeral in the tens position. 5,321.

3. What is the face value of the 5 in the number 526? ________

4. What is the place value of the 5 in the number 526? ________

5. What is the column name of the position of the 5 in the number 526?
____

C. Match the following numbers with their correct word forms.

_____ 1. 26 A. one thousand four hundred twenty-seven
_____ 2. 1,427 B. twenty-six

3. Circle the correct spelling

three threa

4. Write in numerals the given word number.
three thousand seventy-eight __________

5. Write the given numbers in word form.
4,321 ____

D. Round off the following numbers to the nearest 10.

1. 47 ______
2. 374 ______

Round off the following numbers to the nearest 100.

3. 1,523 ______
4. 963 ______
5. 637 ______

Identify the following numbers as odd or even.

1. 57 ______
2. 79 ______
3. 1,926 ______
4. 3,742 ______
5. 33 ______

UNIT I

NUMERATION

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. Actual value--the face value of a number multiplied by its place value
2. Approximate--nearly correct or exact
3. Column name--name given to the place or position of each numeral making up a number
4. Even number--one of the sequence of natural numbers that are exactly divisible by two, beginning with two and counting by twos
5. Face value--what the number actually says
6. Nearest--that closest to something
7. Numeral--of, relating to, or expressing numbers
8. Odd number--being one of the sequence of natural numbers that are not divisible by two, beginning with one and counting by twos
9. Place value--a value depending on which column or place a number is in
10. Round off--changing the actual value of a number to an approximate value
11. Word number--a word which can be used to mean the same thing as a numeral

INFORMATION

UNIT I

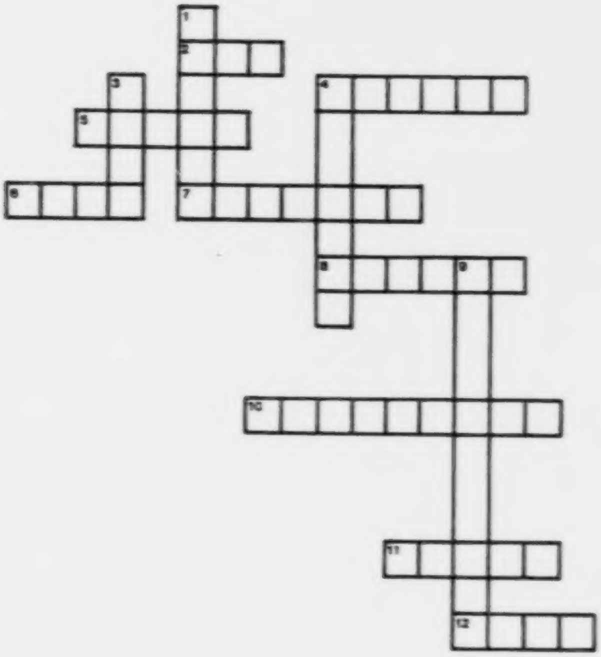
NUMERATION

ACTIVITY SHEET 1--CROSSWORD PUZZLE

ACTIVITY

Directions: Fill in the blanks in the clues and then the crossword puzzle by using the list of words below.

Actual
Approximate
Column
Even
Face
Name
Nearest
Number
Numeral
Odd
Place
Round off
Value
Word



Across

2. ________ number--one of the sequence of natural numbers that are not divisible by two, beginning with one and counting by twos

4. Odd ________--one of the sequence of natural numbers that are not divisible by two, beginning with one and counting by twos

5. Actual ________--the value of a number multiplied by its place value

6. Column ________--name given to the place or position of each numeral making up a number.

7. ________--that closest to something

8. ________ value--the value of a number multiplied by its place value

10. ________ ____--changing the actual value of a number to an approximate value

11. __________ value--a value depending on which column or place a number is in

12. ________ number--one of the sequence of natural numbers that are exactly divisible by two, beginning with two and counting by twos

Down

1. ________ name--name given to the place or position of each numeral making up a number

3. ________ value--what the number actually says

4. ________--of, relating to, or expressing numbers

9. ________--nearly correct or exact

UNIT I

NUMERATION

INFORMATION SHEET 2--NUMBER VALUES

I. In our number system we have ten symbols:

0 1 2 3 4 5 6 7 8 9

A. Each of these numbers are called digits.

B. When you use one or more of these digits, you make a number.

C. You can use these same digits to write any number, no matter how large.

D. When more than one digit is used, its value will depend on where it is placed.

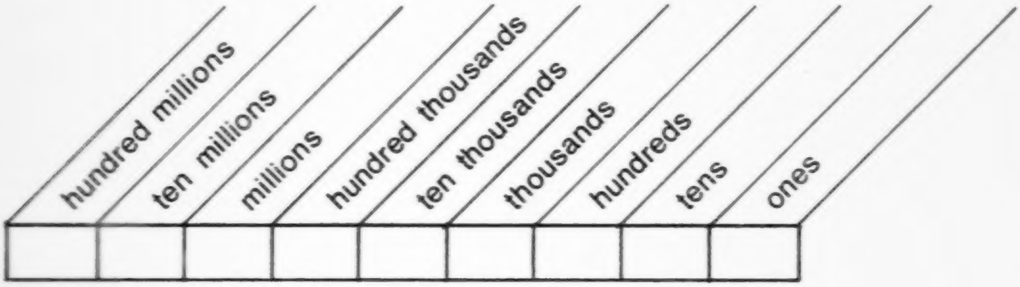
EXAMPLE: In the number 572:

The 2 is worth 2 X 1 or 2
The 7 is worth 7 x 10 or 70
The 5 is worth 5 X 100 or 500

II. Each position a number is in has a column name.

A. The column name is the name given to the place or position of each numeral making up a number.

EXAMPLE: The column names are:


hundred millions
ten millions
millions
hundred thousands
ten thousands
thousands
hundreds
tens
ones

B. The number 8 would take up one space and it is located in the ones column.

EXAMPLE: $\boxed{8}$

C. In the number 78, the 7 is in the second space from the right which is the tens column.

EXAMPLE: $\boxed{7}\boxed{8}$

INFORMATION

D. In the number 578, the 5 is in the third space from the right, which is the hundreds column.

EXAMPLE:

5	7	8

III. Each Column Has a Place Value

A. The place value is a value depending on which column or place a number is in.

EXAMPLE:

1	1	1

A 1 in the tens column is equal to one ten.

B. Each column position has a different place value.

EXAMPLE: The hundreds column is equal to 100
The tens column is equal to 10
The ones column is equal to 1

IV. Each number you write or use has a face value, which is what the number actually says.

V. Each numeral in a number has an actual value.

A. The actual value of a number is the face value of a number multiplied by its place value.

EXAMPLE: In the number 325, at face value you have:

Face Value		Place Value		Actual
3	X	100	=	300
2	X	10	=	20
5	X	1	=	5

Looking at the position of each numeral in the number, you can determine its place value. When you multiply the face value of the number by the place value, you find the actual value.

B. When you place the same number in three different columns or places, you have three different values.

EXAMPLE: In the number 222, the 2 on the right is valued at 2 ones or 2; the middle 2 is valued at 2 tens or 20; the 2 on the left is valued at 2 hundreds or 200.

(NOTE: In this unit you are given a chart on page This chart, with column name, place value, face value, and actual value, will be useful to you in working many of the Activity Sheets.

IN OUR NUMBER SYSTEM
WE HAVE TEN SYMBOLS:

0 1 2 3 4 5 6 7 8 9

NAME AND VALUES

THE ACTUAL VALUE of a number is found by multiplying its FACE VALUE (what it says) times its PLACE VALUE.

(NOTE: To make it easier to read, commas are used to seperate triplets of numbers.

COLUMN NAME	PLACE VALUE	FACE VALUE	ACTUAL VALUE
THOUSANDS	.001	8	.008
HUNDRETHS	.01	4	.04
TENTHS	.1	3	.3
DECIMAL	.	.	.
ONES	1	7	7
TENS	10	4	40
HUNDREDS	100	2	200
THOUSANDS	1,000	3,	3,000
TEN THOUSANDS	10,000	6	60,000
HUNDRED THOUSANDS	100,000	4	400,000
MILLIONS	1,000,000	2,	2,000,000
TEN MILLIONS	10,000,000	7	70,000,000
HUNDRED MILLIONS	100,000,000	3	300,000,000
BILLIONS	1,000,000,000	5,	5,000,000,000
TEN BILLIONS	10,000,000,000	2	20,000,000,000
HUNDRED BILLIONS	100,000,000,000	3	300,000,000,000

The number shown can be read: Three hundred twenty-five billion, three hundred seventy-two million, four hundred sixty-three thousand, two hundred forty-seven (and) three hundred forty-eight thousandths.

UNIT I

NUMERATION

ACTIVITY SHEET 2--IDENTIFYING NUMBER POSITIONS

Directions: Look at the numbers listed below and circle the correct numeral.

1. Circle the numeral in the hundreds position. 5,326
2. Circle the numeral in the tens position. 4,917
3. Circle the numeral in the ones position. 6,421
4. Circle the numeral in the thousands position. 3,073
5. Circle the numeral in the ten thousands position. 79,206
6. Circle the numeral in the hundred thousands position. 739,863
7. Circle the numeral in the tens position. 16,091
8. Circle the numeral in the ones position. 82,628
9. Circle the numeral in the hundreds position. 73,575
10. Circle the numeral in the tens position. 12,429

UNIT I

NUMERATION

ACTIVITY SHEET 3--NAME AND VALUES

Directions: Using the chart provided to help you, fill in the boxes for each digit in the numbers given.

EXAMPLE:

Digit	Column Name	Place Value	Face Value	Actual Value
3	hundreds	100	3	300
9	tens	10	9	90
7	ones	1	7	7

Add the Actual Values = 397

5,762

Digit	Column Name	Place Value	Face Value	Actual Value
5				
7				
6				
2				

Add the Actual Values Together ____________

2,675

Digit	Column Name	Place Value	Face Value	Actual Value
2				
6				
7				
5				

Add the Actual Values Together ____________

4,537

Digit	Column Name	Place Value	Face Value	Actual Value
4				
5				
3				
7				

Add the Actual Values Together ____________

ACTIVITY

UNIT I

NUMERATION

ACTIVITY SHEET 4--FACE AND PLACE

Directions: Write the face value and the place value of each of the digits in the following numbers. On the line below the number, write the word form of the number.

EXAMPLE: 4,312

FACE VALUE	PLACE VALUE
two	1
one	10
three	100
four	1,000

Four thousand three hundred twelve

(Remember the word "and" is for decimals only when reading numbers. To say four thousand three hundred and twelve is a "no-no.")

	FACE VALUE	PLACE VALUE
1. 562		
2. 348		
3. 607		
4. 3,125		

FACE VALUE PLACE VALUE

5. 8,643

6. 96,302

7. 87,456

8. 123,456

9. 4,006,005

10. 532.02

11. 4,372

12. 6,527

	FACE VALUE	PLACE VALUE
13. 746		
14. 921		
15. 10,455		
16. 423.7		
17. 37,003		
18. 9,012		
19. 361.02		
20. 19,127		

ACTIVITY

UNIT I

NUMERATION

INFORMATION SHEET 3--MATCHING WORD FORMS AND NUMBER FORMS

In working with numbers, it is important that you be able to match word forms of numbers with the correct numeral.

EXAMPLE: One hundred twenty-five is the word form of the numeral 125.

I. In reading the number in numeral form, you may need to refer back to Information Sheet 2 for the actual value of the number.

II. It makes it easier to read the number if you use punctuation when you write it.

EXAMPLE: It would be difficult to read

12324

However, if you use a comma every third digit counting from the right, it makes it much easier to read. This divides hundreds, thousands, and millions.

12,324

Now reading the number from the left to the right, we read: twelve thousand, three hundred twenty-four

III. In order to use word forms, you will need to be able to spell them correctly.

NUMBER PUNCTUATION

2 3 9 0 7 6 5 3 9

2 3 9 , 0 7 6 , 5 3 9 .

UNIT I

NUMERATION

ACTIVITY SHEET 5--SPELLING WORD FORMS

Directions: Review the words given and learn the correct spellings. After practicing writing these words, have a friend call out these words to you. Write down the correct spelling. Check your work against the list. Review any words you have misspelled and learn the correct spelling.

zero
one
two
three
four
five
six
seven
eight
nine
ten
eleven
twelve
thirteen
fourteen
fifteen
sixteen
seventeen
eighteen
nineteen
twenty
thirty
forty
fifty
sixty
seventy
eighty
ninety
hundred
thousand
million
billion
tenths
hundredths
thousandths
millionths
decimal
comma
place value
face value
exponent

ACTIVITY

UNIT I

NUMERATION

ACTIVITY SHEET 6--WHAT IS THE NUMBER?

Directions: Write in numerals the given number:

1. Two hundred seventy-five ________________
2. Nine thousand seventy-five ________________
3. Three hundred twenty-six ________________
4. Four hundred two ________________
5. Six hundred sixty-six ________________
6. Seven hundred and two tenths ________________
7. Nine hundred seventeen ________________
8. One hundred thirty-two and one hundred two thousandths

   ____

9. Eight hundred seventy-nine and forty-four hundredths

   ____

10. Ten thousand five hundred eleven

    ____

ACTIVITY

UNIT I

NUMERATION

ACTIVITY SHEET 7--WHAT IS THE WORD FORM?

Directions: Write in words the given numerals:

1. 655 ______________________________

2. 87 ______________________________

3. 934 ______________________________

4. 303 ______________________________

5. 5,481 ______________________________

6. 4,019 ______________________________

7. 1.2 ______________________________

8. 34.67 ______________________________

ACTIVITY

UNIT I

NUMERATION

INFORMATION SHEET 4--ROUNDING NUMBERS

I. When you round off a number, you change the actual value of a number to an approximate value.

   A. There are many occasions when you will want to round off a number.

   B. When you do not need an exact value, rounding numbers make them easier to work with.

II. Before you round off a number, you will need to decide on the value to which you want to round it off.

EXAMPLE: Round off 4,378 to the nearest 100.

4,378 Locate the digit in the hundreds place. Look at the digit to the right of the hundreds digit.

If the digit to the right of the hundreds place is less than 5, leave the hundreds digit as it is and replace the last two digits with 0.

If the digit to the right of the hundreds place is 5 or greater, then add 1 to the hundreds digit and replace the last two digits with 0.

So, 4,378 is 4,400 to the nearest 100.

ROUNDING-OFF NUMBERS

Rounding-off **3,243** to the nearest **10**

3,243 Locate the digit in the tens place.

Look at the digit to the right of the tens digit.

If the digit to the right of the tens place is less than **5** leave the tens digit as it is and replace the last digit with **0**.

If the digit to the right of the tens place is **5** or greater, then add **1** to the tens digit and replace the last digit with **0**.

So **3,243** is **3,240** to the nearest **10**

NUMERATION

ACTIVITY SHEET 8--ROUNDING TO THE NEAREST 10

Directions: Round off the following numerals to the nearest 10.

EXAMPLE: Round off 356 to the nearest 10.

356 Locate the digit in the tens place. Look at the digit to the right of the tens digit.

If the digit to the right of the tens place is less than 5, leave the tens digit as it is and replace the last digit with 0.

If the digit to the right of the tens place is 5 or greater, then add 1 to the tens digit and replace the last digit with 0.

So, 360 is 356 to the nearest 10.

Thus, 353, is nearer 350. Do you see that 56 is nearer 60 and 53 is nearer 50?

ACTIVITY

1. 56 ______________
2. 347 ______________
3. 512 ______________
4. 208 ______________
5. 196 ______________
6. 425 ______________
7. 679 ______________
8. 344 ______________
9. 1,738 ______________
10. 8,073 ______________

UNIT I

NUMERATION

ACTIVITY SHEET 9--ROUNDING TO THE NEAREST 100

Directions: Round off the following numerals to the nearest 100.

EXAMPLE: Round off 3,475 to the nearest 100.

3,475 Locate the digit in the hundreds place. Look at the digit to the right of the hundreds digit.

If the digit to the right of the hundreds place is *less* than 5, leave the hundreds digit as it is and replace the last two digits with 0.

If the digit to the right of the hundreds digit is *5* or greater, add 1 to the hundreds digit and replace the last two digits with 0.

So, 3,500 is 3,475 to the nearest 100.

Thus, 3,426 is 3,400. Do you see that 426 is nearer 400, and that 475 is nearer 500?

1. 273 ______________

2. 519 ______________

3. 861 ______________

4. 108 ______________

5. 735 ______________

6. 6,199 ______________

7. 3,425 ______________

8. 9,749 ______________

9. 10,321 ______________

10. 10,082 ______________

ACTIVITY

UNIT I

NUMERATION

ACTIVITY SHEET 10--ROUND AND ADD

Directions: Round each number to the nearest 100 and add each column to find the totals.

1. 687 __________
2. 432 __________
3. 764 __________
4. 555 __________
5. 386 __________
6. 204 __________
7. 637 __________
8. 523 __________
9. 796 __________
10. 624 __________

TOTAL __________ TOTAL __________

UNIT I

NUMERATION

ACTIVITY SHEET 11--ROUNDING TO THE NEAREST 1,000

Directions: Round off the following numerals to the nearest 1,000.

EXAMPLE: Round off 6,456 to the nearest 1,000.

6,456 Locate the digit in the thousands place. Look at the digit to its right.

If the digit to the right is less than 5, leave the thousands digit as it is and change the digits to the right of the thousands digit to 0.

If the digit to the right is 5 or greater, then add 1 to the thousands digit and change the digits to the right of the thousands digit to 0.

Thus, 6,000 is 6,456 to the nearest 1,000.

1. 4,389 ______________
2. 3,842 ______________
3. 2,791 ______________
4. 1,274 ______________
5. 929 ______________
6. 8,505 ______________
7. 6,100 ______________
8. 5,555 ______________
9. 7,743 ______________
10. 142,499 ______________

UNIT I

NUMERATION

ACTIVITY SHEET 12--ROUNDING TO THE NEAREST 10,000

Directions: Round off the following numerals to the nearest 10,000.

REMEMBER: To round off:

a. Locate the digit to be rounded off.

b. Look at the digit to its right.

c. If the digit to the right is less than 5, leave the digit to be rounded off as it is and replace each digit to its right with a 0.

If the digit to the right is 5 or more, then add 1 to the digit to be rounded and replace each digit to its right with a 0.

d. Then write the number in its rounded off form.

1. 84,698 ______________
2. 356,403 ______________
3. 281,985 ______________
4. 74,009 ______________
5. 6,439,641 ______________
6. 411,568 ______________
7. 419,568 ______________
8. 406,433 ______________
9. 7,560 ______________
10. 9,929,989 ______________

ACTIVITY

UNIT I

NUMERATION

INFORMATION SHEET 5--DISTINGUISHING BETWEEN EVEN AND ODD NUMBERS

I. An even number is one of the sequence of natural numbers that are exactly divisible by two, beginning with two and counting by twos.

  A. In our number system, we have ten symbols. These are 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. Of these, there are numbers called even numbers which can be divided equally in half.

  B. The numbers 2, 4, 6, and 8 are even numbers.

II. An odd number is one of the sequence of natural numbers that are not divisible by two, beginning with one and counting by twos.

  A. Within these same symbols there are odd numbers. Odd numbers are numbers which cannot be divided equally in half.

  B. The numbers 1, 3, 5, 7, and 9 are odd numbers.

EVEN NUMBERS

2 10

4

8 6

ODD NUMBERS

1 9

5

3 7

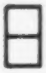
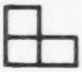
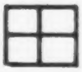
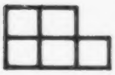
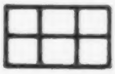
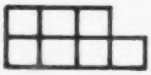
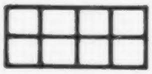
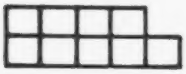
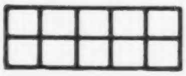
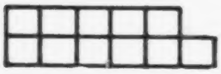
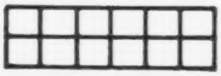
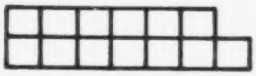
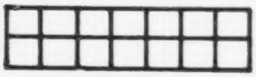
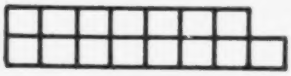
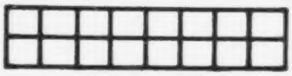
UNIT I

NUMERATION

ACTIVITY SHEET 13--IDENTIFY THE BLOCKS

Directions: Identify each of the following number of blocks as odd or even.

ODD or EVEN

1. ____________
2.  ____________
3.  ____________
4.  ____________
5.  ____________
6.  ____________
7.  ____________
8.  ____________
9.  ____________
10.  ____________
11.  ____________
12.  ____________
13.  ____________
14.  ____________
15.  ____________
16.  ____________

UNIT I

NUMERATION

ACTIVITY SHEET 14--WHICH IS WHICH

Directions: Identify the following numbers as odd or even.

EXAMPLE: 691 odd

1. 47 __________
2. 24 __________
3. 193 __________
4. 7,693 __________
5. 5,271 __________
6. 66 __________
7. 1,045 __________
8. 21,723 __________
9. 93.2 __________
10. 3,437 __________
11. 32.75 __________
12. 9,316 __________
13. 86,001 __________
14. 72,347 __________
15. 3,544 __________
16. 3 __________
17. 16 __________
18. 88 __________
19. 400 __________
20. 12.3 __________

NUMERATION

ACTIVITY SHEET 15--WORD NUMBERS--ODD OR EVEN

Directions: Identify the following word numbers as odd or even.

EXAMPLE: two hundred twenty-six even

1. three hundred ninety-two ____________
2. five hundred sixty-seven ____________
3. two hundred seventy-six ____________
4. seven hundred thirty-four ____________
5. twelve thousand one ____________
6. eight hundred seventy-three ____________
7. six hundred twenty-five ____________
8. one thousand ____________
9. nine hundred ninety-nine ____________
10. two hundred sixty-eight ____________
11. thirty-six ____________
12. nine hundred thirteen ____________
13. eight thousand six hundred fifty-two ____________
14. four thousand seventy ____________
15. one thousand one hundred forty-one ____________
16. sixteen thousand seven hundred forty-one ____________
17. three hundred thirty-five ____________
18. two hundred twenty-six ____________
19. four hundred seventy-nine ____________
20. seven thousand three hundred seventy-four ____________

UNIT I

NUMERATION

ACTIVITY SHEET 16--DOMINOES--ODD OR EVEN

This is a group activity to be done by two or more people.

Materials: Sets of standard dominoes to be used by students in pairs.

DIRECTIONS

1. Turn the dominoes face down and mix them.
2. Each player takes seven dominoes.
3. The player that has the largest domino starts the game.
4. The first player places a domino face up in front of the other player.
5. If the domino is odd, the second player must place a domino to make the sum of the two dominoes even.
6. If the domino is even, the second player must place a domino to make the sum of the two dominoes odd.
7. If the second player places the correct domino to make the sum even or odd, he/she takes the two dominoes and saves them for the end of the game count.
8. If the second player does not have a domino that is needed, he/she must borrow from the pile.
9. When one of the players has played his/her last domino from the seven that he/she started with, the game stops. He/she collects any dominoes that the second player has not played.
10. Each player will count the number of dominoes that he/she has won.
11. The player with the greatest number of dominoes wins the game.

UNIT I

NUMERATION

UNIT TEST--PART 1

Match the following terms with their correct definitions. Write the correct letter in the blank at the left.

_____ 1. Actual value

_____ 2. Approximate

_____ 3. Column name

_____ 4. Even number

_____ 5. Face value

_____ 6. Nearest

_____ 7. Numeral

_____ 8. Odd number

_____ 9. Place value

_____ 10. Round off

_____ 11. Word number

a. nearly correct or exact

b. changing the actual value of a number to an approximate value

c. one of the sequence of natural numbers that are exactly divisible by two, beginning with two and counting by twos

d. a value depending on which column or place a number is in

e. what the number actually says

f. name given to the place or position of each numeral making up a number

g. relating to, or expressing numbers

h. one of the sequence of natural numbers that are not divisible by two, beginning with one and counting by twos

i. the face value of a number multiplied by its place value

j. a word which can be used to mean the same thing as a numeral

k. that closest to something

TEST

UNIT I

NUMERATION

UNIT TEST--PART 2

A. Fill in the boxes for each digit in the numbers given.

EXAMPLE: 573

Digit	Column Name	Place Value	Face Value	Actual Value
5	hundreds	100	5	500
7	tens	10	7	70
3	ones	1	3	3

Add the Actual Values = 573

1. 392

Digit	Column Name	Place Value	Face Value	Actual Value
3				
9				
2				

Add the Actual Values Together =

2. 629

Digit	Column Name	Place Value	Face Value	Actual Value
6				
2				
9				

Add the Actual Values Together =

TEST

B. Look at the numbers listed below and circle the correct numeral.

1. Circle the numeral in the hundreds position 31,725.
2. Circle the numeral in the ones position 3,907.
3. Circle the numeral in the thousands position 4,796.
4. Circle the numeral in the tens position 5,321.

C. What is the face value of 5 in the number 526? ___________

D. What is the place value of the 5 in the number 526? ___________

E. What is the column name of the position the 5 is in, in the number 526?

____

F. What is the face value of the 3 in the number 237? ___________

G. What is the place value of the 3 in the number 237? __________

H. What is the column name of the position the 3 is in, in the number 237?

____

I. List the ten symbols we have in our number system.

____

UNIT I

NUMERATION

UNIT TEST--PART 3

A. Match the following numbers with the word forms. Write the correct letter in the blanks at the left.

_____ 1. 298 a. one thousand four hundred twenty-seven

_____ 2. 375 b. fourteen

_____ 3. 26 c. two hundred ninety-eight

_____ 4. 14 d. twenty-six

_____ 5. 1,427 e. three hundred seventy-five

B. Review the list of words below and circle the correct spellings in each column.

threa	twelve	forty	thirty
three	twilve	fourty	thirthy

C. Write in numerals the given word numbers:

1. Two hundred sixty-seven ____________________
2. Three thousand seventy-eight ____________________
3. Five hundred and thirty-two hundreths ____________________
4. Ten thousand three hundred twelve ____________________

D. Write in word numbers the given numbers:

1. 378 ____
2. 297 ____
3. 4,321 ____
4. 3.79 ____

TEST

UNIT I

NUMERATION

UNIT TEST--PART 4

A. Round off the following numbers to the nearest 10.

1. 47 ________ 3. 136 ________ 5. 298 ________

2. 24 ________ 4. 374 ________

B. Round off the following numbers to the nearest 100.

1. 1,523 ________ 3. 637 ________ 5. 1,526 ________

2. 3,278 ________ 4. 963 ________

C. Round off the following numbers to the nearest 1,000.

1. 5,392 ________ 3. 137,974 ________ 5. 79,432 ________

2. 6,736 4. 1,293 ________

D. Round off the following numbers to the nearest 10,000.

1. 73,293 ________ 3. 9,873,241 ________ 5. 576,498 ________

2. 136,543 ________ 4. 372,723 ________

UNIT I

NUMERATION

UNIT TEST--PART 5

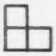
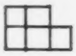
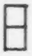
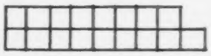
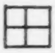
A. Answer the following questions.

1. Write an even number: ________
2. Write an odd number: ________

B. Identify the following numbers as odd or even.

1. 57 ________
2. 24 ________
3. 79 ________
4. 10,073 ________
5. 1,926 ________
6. 3,742 ________
7. 81 ________
8. 48 ________
9. 372.1 ________
10. 33 ________

C. Identify the following numbers of blocks as odd or even.

1.  ________
2.  ________
3.  ________
4.  ________
5.  ________

D. Identify the following word numbers as odd or even.

1. nine hundred thirteen ________
2. sixteen thousand seven hundred forty-one ________
3. twelve thousand one ________
4. thirty-six ________
5. five hundred sixty-seven ________

UNIT II

ADDING WHOLE NUMBERS

UNIT OBJECTIVE

After completion of this unit, the student will be able to add whole numbers. This knowledge will be evidenced through demonstration and by successfully completing the unit test.

SPECIFIC OBJECTIVES

In completing this unit of instruction, the student will:

1. Add two one-digit addends whose sum is a one-digit number and check the answer
2. Add two one-digit addends whose sum is a two-digit number and check the answer
3. Add three one-digit addends and check the answer
4. Add a one-digit and a two-digit addend whose sum is a two-digit or three-digit number and check the answer
5. Add three or more one-digit and two-digit addends and check the answer
6. Add two to six addends, each having from one to five digits, and check the answers
7. Solve a short word problem involving whole number addends
8. Given two sets of whole number addends, express the relation between the two sets, using the "greater than" or "less than" symbols (>, <).
9. Given two sets of whole number addends, express the relation between the two sets, using "equal" and "unequal" symbols (=, ≠).

UNIT II

ADDING WHOLE NUMBERS

NOTES TO THE INSTRUCTOR

I. Objective Sheet

- A. Discuss the unit objective with the students.
- B. Discuss each specific objective with the students.
- C. Have the students complete the objectives in a sequence best suited to your classroom.
- D. Add any objectives necessary to meet fully the needs of the unit and the student.

II. Pre/Post Test

- A. The Pre/Post Test may be used to determine the students' knowledge of information prior to beginning the unit.
- B. The Pre/Post Test is divided into parts to correspond with each Information Sheet.
    1. The student may not need to cover each Information Sheet.
    2. The teacher may use the test to determine the area of information with which the student may need help.
- C. The Pre/Post Test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

- A. INFORMATION SHEET 1~~--TERMS AND DEFINITIONS~~
    1. Stress to the students the importance of understanding the terms used in working addition problems.
    2. Use ACTIVITY SHEET 1--WORD FIND to reinforce this area of instruction.
- B. INFORMATION SHEET 2--ADDITION
    1. Explain that any time you combine two or more numbers you are doing addition.
    2. Explain the symbol used in addition problems (+).
    3. Explain that when you add two or more numbers together the result is called the sum.

4. Point out to the students that numbers to be added are called "addends."

5. Show TM-1--THINK OF ADDITION AS ADDING MORE ITEMS TO A GROUP. . . and TM-2--ADDITION OF WHOLE NUMBERS.

6. Explain the importance of lining up the digits correctly when doing addition.

7. Show TM-3--IT IS IMPORTANT THAT THE DIGITS IN ADDITION PROBLEMS BE LINED UP CORRECTLY.

8. Explain the two ways to check work in addition.

9. Show TM-4--CHECKING YOUR WORK to reinforce this area of information.

10. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 2--ONE-DIGIT ADDITION

    b. ACTIVITY SHEET 3--TWO-DIGIT SUMS

    c. ACTIVITY SHEET 4--ADDING TWO OR MORE NUMBERS

    d. ACTIVITY SHEET 5--ADDING-TWO DIGIT NUMBERS

    e. ACTIVITY SHEET 6--ADDING MORE TWO-DIGIT NUMBERS

    f. ACTIVITY SHEET 7--TWO, THREE, FOUR, AND FIVE DIGIT NUMBERS

    g. ACTIVITY SHEET 8--WORD PROBLEMS

C. INFORMATION SHEET 3--EQUAL/UNEQUAL

1. Review the definition of equal.

2. Explain the symbol for equal.

3. Review the definition of unequal.

4. Explain the symbol for unequal.

5. Show TM-5--EQUAL/UNEQUAL to reinforce this information.

6. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 9--EQUAL/UNEQUAL

    b. ACTIVITY SHEET 10--WHICH ONE IS IT?

    c. ACTIVITY SHEET 11--EQUAL/UNEQUAL--TRUE/FALSE

D. INFORMATION SHEET 4--GREATER THAN/LESS THAN

1. Explain what it means to compare values of numbers.

2. Explain the meaning of "greater than."

3. Explain the meaning of "less than."

4. Explain that the symbol for "greater than" is ">."

5. Explain that the symbol for "less than" is "<."

6. Show TM-6--GREATER THAN/LESS THAN to reinforce this area of instruction.

7. Use the following Activity Sheets to meet fully the objectives of this unit.

   a. ACTIVITY SHEET 12--GREATER THAN/LESS THAN

   b. ACTIVITY SHEET 13--TRUE/FALSE

IV. Answers to Pre/Post Test

A. Answers are based on total information covered in this unit.

B. Right and wrong answers may assist the teacher in discovering individual student weaknesses.

V. Answers to Activity Sheets

A. Some of the Activity Sheets will vary according to training and should be graded individually.

B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

A. The Unit Test is divided into four parts.

1. Each part covers one Information Sheet.

2. Each part uses various methods of testing.

B. Various approaches may be used in testing.

1. Give each part of the test after the student has completed the information in one information area or sheet.

2. Give the entire test upon completion of all the Information and Activity Sheets.

3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

C. Add test parts corresponding to any information areas or sheets added to the unit.

VII. Answers to Unit Tests

A. Answers are based on total information covered in the unit.

B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

A. Bitter, Gary G. et al. McGraw-Hill Mathematics K-8. New York: Webster Division, McGraw-Hill Book Company, 1981.

B. Deans, Edwina. et al. Exploring Mathematics. New York: American Book Company, 1963.

C. Goozner, Calman. Arithmetic Skills Workbook. New York: AMSCO School Publications, Inc., 1973.

UNIT II

ADDING WHOLE NUMBERS

ANSWERS TO PRE/POST TEST

A.
1. addends
2. set
3. whole number
4. less
5. add
6. unequal
7. greater
8. equal
9. sum

B.
1. 9
2. 11
3. 19
4. 26
5. 9
6. 103
7. 165
8. 9,843
9. 18,094
10. 60,558

C.
1. =
2. ≠
3. ≠
4. ≠
5. =

D.
1. <
2. >
3. >
4. >
5. <

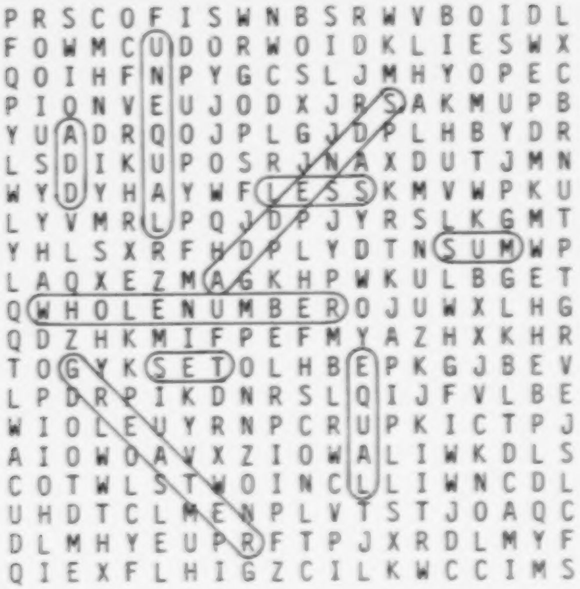
UNIT II

ADDING WHOLE NUMBERS

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1

1. addends
2. set
3. whole number
4. less
5. add
6. unequal
7. greater
8. equal
9. sum



P R S C O F I S W N B S R W V B O I D L
F O W M C U D O R W O I D K L I E S W X
Q O I H F N P Y G C S L J M H Y O P E C
P I O N V E U J O D X J R S A K M U P B
Y U A D R Q O J P L G J D P L H B Y D R
L S D I K U P O S R J N A X D U T J M N
W Y D Y H A Y W F L E S S K M V W P K U
L Y V M R L P Q J D P J Y R S L K G M T
Y H L S X R F H D P L Y D T N S U M W P
L A Q X E Z M A G K H P W K U L B G E T
Q W H O L E N U M B E R O J U W X L H G
Q D Z H K M I F P E F M Y A Z H X K H R
T O G Y K S E T O L H B E P K G J B E V
L P D R P I K D N R S L Q I J F V L B E
W I O L E U Y R N P C R U P K I C T P J
A I O W O A V X Z I O W A L I W K D L S
C O T W L S T W O I N C L L I W N C D L
U H D T C L M E N P L V T S T J O A Q C
D L M H Y E U P R F T P J X R D L M Y F
Q I E X F L H I G Z C I L K W C C I M S

ACTIVITY SHEET 2

1. 7
2. 9
3. 7
4. 5
5. 9
6. 9
7. 8
8. 6
9. 9
10. 8
11. 6
12. 5
13. 8
14. 5
15. 9
16. 4
17. 4
18. 9
19. 8
20. 4

ANSWERS TO ACTIVITIES

ACTIVITY SHEET 3

1. 10
2. 12
3. 12
4. 15
5. 15
6. 13
7. 14
8. 16
9. 11
10. 13
11. 13
12. 10
13. 13
14. 18
15. 17
16. 11
17. 14
18. 14
19. 12
20. 14

ACTIVITY SHEET 4

1. example
2. 4
3. 0
4. 7
5. 9
6. 9
7. 19
8. 16
9. 10
10. 7
11. 3
12. 1
13. 4
14. 1
15. 8
16. 9
17. 13
18. 19
19. 19
20. 15

ACTIVITY SHEET 5

1. example
2. 26
3. 83
4. 41
5. 16
6. 13
7. 23
8. 38
9. 59
10. 57
11. 103
12. 38
13. 107
14. 25
15. 15
16. 15
17. 104
18. 47
19. 101
20. 100

ACTIVITY SHEET 6

1. example
2. 51
3. 99
4. 165
5. 54
6. 102
7. 68
8. 90
9. 145
10. 153
11. 114
12. 231
13. 79
14. 30
15. 26
16. 134
17. 163
18. 130
19. 79
20. 120

ACTIVITY SHEET 7

1. example
2. 169
3. 149
4. 155
5. 990
6. 2,211
7. 7,266
8. 9,843
9. 9,361
10. 4,337
11. 19,562
12. 17,131
13. 18,094
14. 42,580
15. 5,855
16. 65,562
17. 60,558
18. 78,014
19. 37,926
20. 9,140

ACTIVITY SHEET 8

1. 541 sq. ft.
2. 84 hours
3. $7,312
4. 510 sq. ft.
5. 632 sq. ft.
6. 12,308 cookies
7. 1,291 inches
8. 2,553 items
9. 67 inches
10. 81 inches

ACTIVITY SHEET 9

1. example
2. ≠
3. =
4. =
5. ≠
6. =
7. ≠
8. =
9. =
10. =
11. =
12. =
13. =
14. ≠
15. =
16. =
17. ≠
18. =
19. =
20. ≠

ACTIVITY SHEET 10

1. $=$
2. $\neq$
3. $\neq$
4. $=$
5. $=$
6. $\neq$
7. $\neq$
8. $=$
9. $\neq$
10. $=$
11. $=$
12. $\neq$
13. $=$
14. $\neq$
15. $=$
16. $\neq$
17. $\neq$
18. $\neq$
19. $\neq$
20. $=$

ACTIVITY SHEET 11

1. T
2. F
3. F
4. F
5. F
6. T
7. F
8. F
9. F
10. T
11. T
12. T
13. T
14. F
15. T
16. F
17. T
18. T
19. T
20. F

ACTIVITY SHEET 12

1. example
2. $>$
3. $>$
4. $<$
5. $<$
6. $>$
7. $<$
8. $>$
9. $<$
10. $>$
11. $<$
12. $<$
13. $>$
14. $<$
15. $>$
16. $>$
17. $<$
18. $>$
19. $>$
20. $>$

ACTIVITY SHEET 13

1. F
2. T
3. T
4. F
5. T
6. F
7. T
8. T
9. F
10. T

UNIT II

ADDING WHOLE NUMBERS

ANSWERS TO UNIT TEST

PART 1

1. d
2. e
3. c
4. i
5. h
6. g
7. b
8. f
9. a

PART 2

1. 9
2. 9
3. 9
4. 8
5. 12
6. 11
7. 12
8. 13
9. 7
10. 9
11. 19
12. 13
13. 26
14. 103
15. 165
16. 120
17. 9,843
18. 18,094
19. 60,558
20. 84

PART 3

A. 1. =
2. =
3. ≠
4. =
5. ≠
6. =
7. =
8. ≠
9. =
10. ≠

B. 1. F
2. T
3. T
4. T
5. F
6. F
7. T
8. T
9. F
10. T

PART 4

1. >
2. <
3. >
4. >
5. >
6. >
7. <
8. <
9. >
10. >

B. 1. F
2. T
3. T
4. F
5. T

UNIT II

ADDING WHOLE NUMBERS

PRE/POST TEST

A. Using the words below, fill in the blanks.

Add
Addends
Equal
Greater
Less
Set
Sum
Unequal
Whole number

1. Numbers to be added are called _______________.
2. A _______________ is a number of things of the same kind that belong or are used together.
3. A number used for counting is called a __________ __________.
4. The symbol "<" means lower in value or __________ than.
5. When you _______________, you combine the value of two or more numbers to form a larger number.
6. When two things are not the same measure, quantity, amount, or number, they are _______________. The symbol is "≠."
7. The symbol ">" means higher in value or _______________ than.
8. When two things are the same measure, quantity, amount, or number, they are said to be _______________. The symbol is "=."
9. When adding numbers the result is called the __________.

TEST

B. Work the addition problems below and check the sum.

1. 7 + 2 = ____
2. 8 + 3 = ____
3. 9 + 5 + 5 = _____
4. 20 + 6 = ____
5. 1 + 6 + 2 = ____
6. 96 + 7 = ____
7. 67 + 23 + 75 = ____
8. 5946 + 3897 = ____
9. 8544 + 3763 + 2198 + 3589 = ____
10. 7, 507, 24, 7,634, 52,386

C. Place the correct symbol (= or ≠) between the following sets of numbers.

1. 6 + 4 _____ 10
2. 17 _____ 9 + 7
3. 1 + 7 _____ 4 + 6
4. 17 + 75 _____ 62 + 40
5. 9 + 2 _____ 5 + 6

D. Place the correct symbol (> or <) between the following sets of numbers.

1. 8 _____ 2 + 7
2. 9 + 7 _____ 14
3. 925 _____ 825
4. 5 + 2 _____ 0 + 6
5. 5 + 3 _____ 9

UNIT II

ADDING WHOLE NUMBERS

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. Add--combining the values of two or more numbers to form a larger number
2. Addends--numbers to be added
3. Equal--two things that are the same measure, quantity, amount, or number; symbol =
4. Greater than--higher in value; symbol >
5. Less than--lower in value; symbol <
6. Set--a number of things of the same kind that belong or are used together
7. Sum--the result of adding numbers
8. Unequal--two things that are not the same measure, quantity, amount, number; symbol ≠
9. Whole number--a number used for counting

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 1--WORD FIND

Directions: Complete the sentences using the following words, and then locate the words in the Word Find by drawing a line through the word.

Add
Addends
Equal
Greater
Less
Set
Sum
Unequal
Whole number

```
P R S C O F I S W N B S R W V B O I D L
F O W M C U D O R W O I D K L I E S W X
Q O I H F N P Y G C S L J M H Y O P E C
P I O N V E U J O D X J R S A K M U P B
Y U A D R Q O J P L G J D P L H B Y D R
L S D I K U P O S R J N A X D U T J M N
W Y D Y H A Y W F L E S S K M V W P K U
L Y V M R L P Q J D P J Y R S L K G M T
Y H L S X R F H D P L Y D T N S U M W P
L A Q X E Z M A G K H P W K U L B G E T
Q W H O L E N U M B E R O J U W X L H G
Q D Z H K M I F P E F M Y A Z H X K H R
T O G Y K S E T O L H B E P K G J B E V
L P D R P I K D N R S L Q I J F V L B E
W I O L E U Y R N P C R U P K I C T P J
A I O W O A V X Z I O W A L I W K D L S
C O T W L S T W O I N C L L I W N C D L
U H D T C L M E N P L V T S T J O A Q C
D L M H Y E U P R F T P J X R D L M Y F
Q I E X F L H I G Z C I L K W C C I M S
```

1. Numbers to be added are called ______________.
2. A __________ is a number of things of the same kind that belong or are used together.
3. A number used for counting is called a ________ __________.
4. The symbol < means lower in value or __________ than.
5. When you __________, you combine the values of two or more numbers to form a larger number.
6. When two things are not the same measure, quantity, amount, or number, they are __________. The symbol is ≠.

ACTIVITY

7. The symbol > means higher in value or ______________ than.

8. When two things are the same measure, quantity, amount, or number, they are said to be _________. The symbol is =.

9. When you add numbers the result is called _________.

UNIT II

ADDING WHOLE NUMBERS

INFORMATION SHEET 2--ADDITION

INFORMATION

I. Taking two or more numbers and combining them is called addition.

   A. Addition is shown by writing the symbol (+) with the numbers to be added.

   B. If you want to add 1 to 5, you would write 1 + 5 or $\begin{array}{r} 1 \\ +\ 5 \\ \hline \end{array}$

II. When adding two or more numbers together, the larger number you get is called the sum.

   A. You may get the same sum by adding different numbers.

   EXAMPLE: 1 + 6 = 7   2 + 5 = 7   3 + 4 = 7

   B. The above example could be shown as:

$$\begin{array}{r} 1 \\ +\ 6 \\ \hline 7 \end{array} \qquad \begin{array}{r} 2 \\ +\ 5 \\ \hline 7 \end{array} \qquad \begin{array}{r} 3 \\ +\ 4 \\ \hline 7 \end{array}$$

III. The numbers set up to be added are called addends; you must be sure that the digits are lined up correctly: ones digit under the ones digit, tens digit under the tens digit and so on.

EXAMPLE: Add 221 + 39
Line your digits correctly $\begin{array}{r} 221 \\ +\ 39 \\ \hline \end{array}$

Add 9 plus 1 equals 10. Write down the 0 under the ones column and carry the "1" to the tens column. Add 3 plus 2 plus 1 equals 6. Write the 6 under the tens column. You do not have another number to add to the 2, so you will bring it down under the hundreds column.

$$\begin{array}{r} {\scriptstyle 1} \\ 221 \\ +\ 39 \\ \hline 260 \end{array}$$

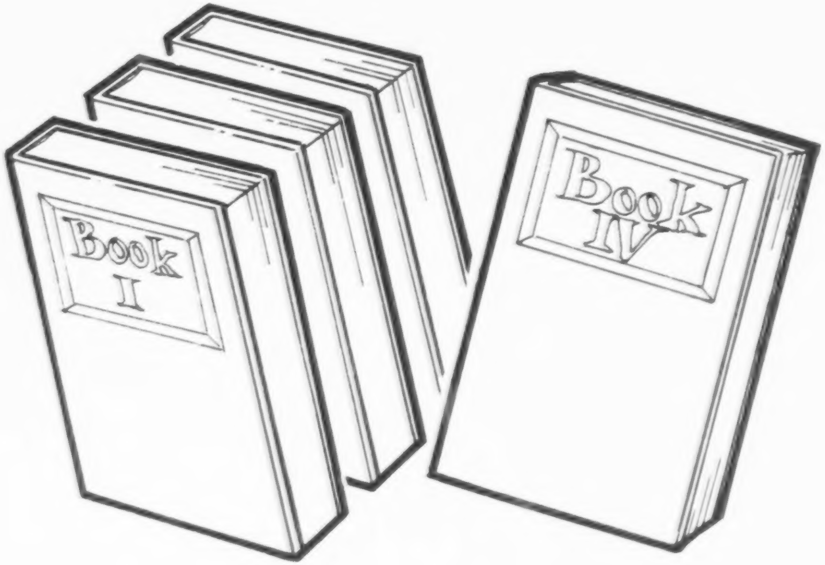
IV. You can check your work in two different ways.

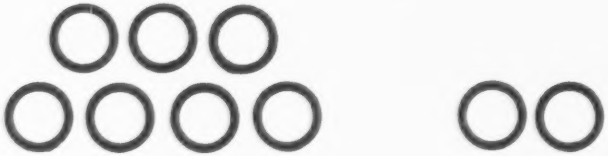
   A. If you added the numbers from the bottom up (starting with the bottom number and adding each one going up), then you can check your answer by starting from the top number and adding down. If you get the same sum each time, your work should be correct.

   B. A second way of checking your answer or sum is to reverse the numbers you are adding and add them again.

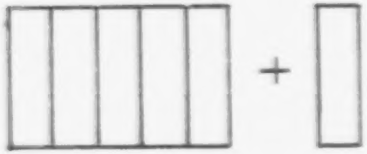
   EXAMPLE: $\begin{array}{r} 21 \\ +\ 13 \\ \hline 34 \end{array} \qquad \begin{array}{r} 13 \\ +\ 21 \\ \hline 34 \end{array}$

THINK OF ADDITION AS ADDING MORE ITEMS TO A GROUP OF ITEMS

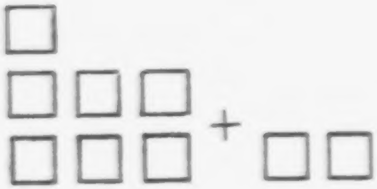

Book I
Book IV



ADDITION OF WHOLE NUMBERS



= 6 or 5 + 1 = 6



= 9 or

$$\begin{array}{r} 7 \\ +\,2 \\ \hline 9 \end{array}$$

IT IS IMPORTANT THAT THE DIGITS IN ADDITION PROBLEMS BE LINED UP CORRECTLY

$$\begin{array}{r} 275 \\ +327 \\ \hline \end{array}$$

TM-3

CHECKING YOUR WORK

$$\begin{array}{r} 23 \\ +11 \\ \hline 34 \end{array}$$

Add from the bottom up ⇧

THEN

Add from the top down ⇩

OR

$$\begin{array}{r} 23 \\ +11 \\ \hline 34 \end{array}$$

Reverse the numbers and add

$$\begin{array}{r} 11 \\ +23 \\ \hline 34 \end{array}$$

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 2--ONE-DIGIT ADDITION

Directions: Work the addition problems and check the sums.

EXAMPLE: Problem $\begin{array}{r}2\\+\ 3\\\hline 5\end{array}$ Check $\begin{array}{r}3\\+\ 2\\\hline 5\end{array}$

1. $\begin{array}{r}4\\+\ 3\\\hline\end{array}$ 2. $\begin{array}{r}6\\+\ 3\\\hline\end{array}$ 3. $\begin{array}{r}2\\+\ 5\\\hline\end{array}$ 4. $\begin{array}{r}1\\+\ 4\\\hline\end{array}$ 5. $\begin{array}{r}7\\+\ 2\\\hline\end{array}$

6. $\begin{array}{r}8\\+\ 1\\\hline\end{array}$ 7. $\begin{array}{r}3\\+\ 5\\\hline\end{array}$ 8. $\begin{array}{r}4\\+\ 2\\\hline\end{array}$ 9. $\begin{array}{r}4\\+\ 5\\\hline\end{array}$ 10. $\begin{array}{r}4\\+\ 4\\\hline\end{array}$

11. 3 + 3 = _____

12. 3 + 2 = _____

13. 6 + 2 = _____

14. 0 + 5 = _____

15. 1 + 8 = _____

16. 2 + 2 = _____

17. 3 + 1 = _____

18. 9 + 0 = _____

19. 1 + 7 = _____

20. 4 + 0 = _____

ACTIVITY

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 3--TWO-DIGIT SUMS

Directions: Work the addition problems below and check the sums.

1. 6	2. 7	3. 6	4. 7	5. 9
+ 4	+ 5	+ 6	+ 8	+ 6
6. 4	7. 6	8. 7	9. 8	10. 6
+ 9	+ 8	+ 9	+ 3	+ 7

11. 8 + 5 = ____

12. 5 + 5 = ____

13. 7 + 6 = ____

14. 9 + 9 = ____

15. 8 + 9 = ____

16. 4 + 7 = ____

17. 5 + 9 = ____

18. 9 + 5 = ____

19. 8 + 4 = ____

20. 7 + 7 = ____

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 4--ADDING TWO OR MORE NUMBERS

Directions: Work the addition problems below and check the sums.

EXAMPLE:	Problem	Check		
	1. 3 1 + 2 6	2 1 + 3 6	2. 1 3 + 0	3. 0 0 + 0

4. 2 4 + 1	5. 3 2 + 4	6. 1 6 + 2	7. 4 6 + 9
8. 5 5 + 6	9. 3 + 2 + 5 = _____		10. 5 + 2 + 0 = _____

11. 3 + 3 + _____ = 9

12. 4 + 4 + _____ = 9

13. 2 + 0 + _____ = 6

14. 8 + 0 + _____ = 9

15. (5 + 1) + 2 = _____

16. 1 + (1 + 7) = _____

17. 6 + 3 + 4 = _____

18. 9 + 5 + 5 = _____

19. 0 + 10 + 9 = _____

20. 2 + 5 + 8 = _____

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 5--ADDING TWO-DIGIT NUMBERS

Directions: Work the addition problems below and check the sums.

EXAMPLE:	Problem	Check		
	1. 3 + 12 15	12 + 3 15	2. 6 + 20	3. 80 + 3

4. 40 + 1	5. 14 + 2	6. 10 + 3	7. 21 + 2
8. 30 + 8	9. 54 + 5	10. 53 + 4	11. 96 + 7
12. 7 + 31	13. 98 + 9	14. 17 + 8	15. 14 + 1
16. 4 + 11	17. 95 + 9	18. 40 + 7	19. 93 + 8
20. 91 + 9			

ACTIVITY

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 6--ADDING MORE TWO-DIGIT NUMBERS

Directions: Work the addition problems below and check the sums.

EXAMPLE: Problem Check

1. 7 16 + 9 32	9 16 + 7 32	2. 9 5 + 37	3. 16 9 + 74
4. 67 23 + 75	5. 17 18 + 19	6. 89 7 + 6	7. 29 39 + 0
8. 20 10 + 60	9. 30 40 + 75	10. 20 70 + 63	11. 9 8 + 97
12. 77 77 + 77	13. 62 0 + 17	14. 10 10 + 10	15. 9 8 + 9
16. 99 17 + 18	17. 23 + 56 + 84 = ________		

18. 20 + 40 + 70 = ________

19. 8 + 71 + 0 = ________

20. 16 + 29 + 75 = ________

ACTIVITY

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 7--TWO, THREE, FOUR, AND FIVE DIGIT NUMBERS

Directions: Work the addition problems below and chech the sums.

EXAMPLE: Problem Check

1. $\begin{array}{r} 27 \\ +\ 91 \\ \hline 118 \end{array}$ $\begin{array}{r} 91 \\ +\ 27 \\ \hline 118 \end{array}$

2. $\begin{array}{r} 88 \\ +\ 81 \\ \hline \end{array}$

3. $\begin{array}{r} 57 \\ +\ 92 \\ \hline \end{array}$

4. $\begin{array}{r} 73 \\ +\ 82 \\ \hline \end{array}$

5. $\begin{array}{r} 222 \\ 594 \\ +\ 174 \\ \hline \end{array}$

6. $\begin{array}{r} 387 \\ 292 \\ 195 \\ 654 \\ +\ 683 \\ \hline \end{array}$

7. $\begin{array}{r} 1374 \\ +\ 5892 \\ \hline \end{array}$

8. $\begin{array}{r} 5946 \\ +\ 3897 \\ \hline \end{array}$

9. $\begin{array}{r} 8384 \\ +\ \ 977 \\ \hline \end{array}$

10. $\begin{array}{r} 2738 \\ +\ 1599 \\ \hline \end{array}$

11. $\begin{array}{r} 5432 \\ 8216 \\ +\ 5914 \\ \hline \end{array}$

12. $\begin{array}{r} 5468 \\ 2918 \\ 5028 \\ +\ 3717 \\ \hline \end{array}$

13. $\begin{array}{r} 8544 \\ 3763 \\ 2198 \\ +\ 3589 \\ \hline \end{array}$

14. $\begin{array}{r} 28{,}370 \\ 5{,}675 \\ 3{,}962 \\ +\ 4{,}573 \\ \hline \end{array}$

15. $\begin{array}{r} 18 \\ 67 \\ 0 \\ 73 \\ +\ 5697 \\ \hline \end{array}$

16. $\begin{array}{r} 5{,}458 \\ 27{,}504 \\ 23{,}561 \\ 8{,}107 \\ +\ \ 932 \\ \hline \end{array}$

17. $\begin{array}{r} 7 \\ 507 \\ 24 \\ 7{,}634 \\ +\ 52{,}386 \\ \hline \end{array}$

18. $\begin{array}{r} 10{,}565 \\ 23{,}071 \\ 11{,}178 \\ 12{,}089 \\ 10{,}000 \\ +\ 11{,}111 \\ \hline \end{array}$

19. $\begin{array}{r} 5{,}001 \\ 6 \\ 19 \\ 324 \\ +\ 32{,}576 \\ \hline \end{array}$

20. $\begin{array}{r} 8387 \\ 126 \\ 70 \\ 256 \\ 300 \\ +\ \ 1 \\ \hline \end{array}$

ADDING WHOLE NUMBERS

ACTIVITY SHEET 8--WORD PROBLEMS

Directions: Read the following word problems and place your answers in the blanks.

1. What is the total floor space in a basement with a recreation room, store room, and laundry containing 286 sq. ft., 91 sq. ft., and 164 sq. ft. respectively? ____________

2. On each of three days, a crew of four workers worked seven hours. What is the total number of hours worked by this crew? ____________

3. A contractor paid bills of $2,480; $765; $1,446; $1,011; and $1,610 for materials. What is the total cost of the materials? ____________

4. What is the total number of square feet of floor underlayment needed to complete a job if three rooms require 120 sq. ft., 90 sq. ft., and 300 sq. ft. respectively? ____________

5. In estimating the finished flooring for a house, a contractor listed the room areas as follows: living room, 168 sq. ft.; dining room, 152 sq. ft.; bedroom, 142 sq. ft.; hall 45 sq. ft.; and kitchen, 125 sq. ft. What is the total area to be floored? ____________

6. The home economics class made cookies for the shut-ins. The number made was as follows: chocolate, 3,560; sugar, 4,920; and oatmeal, 3,828. How many cookies did they make in all? ____________

7. The following lengths are cut from 20-foot bars of hot rolled steel: 221 inches, 197 inches, 34 inches, 107 inches, 116 inches, 231 inches, 239 inches, and 146 inches. How many inches of bar have been cut? ____________

8. The following items are stocked in a tool crib: 239 tool bits, 347 drills, 562 washers, 747 cotter pins, and 658 Whitley keys. Find the total number of items. ____________

9. Several pieces are to be cut from a 1-inch diameter rod. The lengths needed are 7 inches, 12 inches, 14 inches, 31 inches, and 3 inches. How long a rod is required? ____________

10. Five pieces are cut from a piece of stock: 11 inches, 19 inches, 13 inches, 23 inches, and 15 inches. What is the total length? ____________

UNIT II

ADDING WHOLE NUMBERS

INFORMATION SHEET 3--EQUAL/UNEQUAL

I. When two things are the same measure, quantity, amount, or number, they are EQUAL.

   A. The symbol for equal is (=).

   B. After adding together sets of numbers, you may wish to compare the relationship of these numbers.

      EXAMPLE: 7 + 2 = 9 Seven plus two equals 9
      (or is the same as 9)

II. When two things are not the same measure, quantity, amount, or number, they are UNEQUAL.

   A. The symbol for unequal is (≠).

   B. The relationship of sets of numbers may be shown by using the unequal symbol.

      EXAMPLE: 7 + 2 ≠ 10 Seven plus two is unequal to 10.
      (does not equal)

EQUAL

$\mathbf{3 + 5 = 8}$ or $\mathbf{3 + 5}$ is equal to **8**

UNEQUAL

$\mathbf{4 + 9 \neq 8}$ or $\mathbf{4 + 9}$ is unequal to **8**

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 9--EQUAL/UNEQUAL

Directions: Place the correct symbol (= or ≠) between the following sets of numbers.

EXAMPLE:

1. 6 + 3 ____?____ 0 + 9
   9 ____?____ 9
   9 ____=____ 9
2. 17 __________ 9 + 7
3. 2 + 0 __________ 1 + 1
4. 6 + 11 __________ 17
5. 16 + 0 __________ 14 + 5
6. 6 + 0 __________ 2 + 4
7. 1 + 7 __________ 4 + 6
8. 9 + 2 __________ 5 + 6
9. 623 + 0 __________ 0 + 623
10. 9 __________ 4 + 5
11. 345 + 1 __________ 1 + 345
12. 10 __________ 6 + 4
13. 523 + 47 __________ 535 + 35
14. 600 __________ 150 + 350
15. 856 + 0 __________ 0 + 856
16. 150 + 150 __________ 300
17. 17 + 75 __________ 62 + 40
18. 725 + 0 __________ 300 + 5 + 420
19. 25 + 75 __________ 60 + 40
20. 8 + 19 + 30 __________ 147

ACTIVITY

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 10--WHICH ONE IS IT?

Directions: Look at the addition problems below and fill in the correct symbol (= or ≠).

1. 6 + 3 _____ 9
2. 5 + 2 _____ 9
3. 7 + 1 _____ 10
4. 3 + 2 _____ 5
5. 4 + 2 _____ 6
6. 3 + 5 _____ 7
7. 1 + 7 _____ 9
8. 2 + 8 _____ 10
9. 13 + 7 _____ 21
10. 12 + 9 _____ 21
11. 15 + 15 _____ 30
12. 16 + 10 _____ 25
13. 17 + 2 _____ 19
14. 18 + 3 _____ 20
15. 7 + 6 _____ 13
16. 14 + 3 _____ 16
17. 11 + 11 _____ 21
18. 4 + 9 _____ 12
19. 10 + 6 _____ 15
20. 9 + 7 _____ 16

ACTIVITY

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 11--EQUAL/UNEQUAL - TRUE/FALSE

Directions: Read the following problems and circle T for True or F for False.

T F 1. $9 + 21 = 30$

T F 2. $11 + 20 \neq 31$

T F 3. $25 + 27 = 53$

T F 4. $40 + 22 = 61$

T F 5. $27 + 9 \neq 36$

T F 6. $15 + 14 = 29$

T F 7. $17 + 3 \neq 20$

T F 8. $37 + 15 \neq 52$

T F 9. $19 + 7 = 27$

T F 10. $21 + 21 \neq 41$

T F 11. $7 + 11 = 18$

T F 12. $8 + 16 \neq 25$

T F 13. $12 + 5 = 17$

T F 14. $41 + 14 \neq 55$

T F 15. $3 + 9 = 12$

T F 16. $22 + 23 = 55$

T F 17. $2 + 47 \neq 50$

T F 18. $8 + 15 = 23$

T F 19. $14 + 13 \neq 17$

T F 20. $28 + 9 = 38$

ACTIVITY

UNIT II

ADDING WHOLE NUMBERS

INFORMATION SHEET 4--GREATER THAN/LESS THAN

I. You may wish to compare the values of numbers you are working with.

   A. When something is higher in value it is said to be GREATER THAN.

   B. When something is lower in value it is said to be LESS THAN.

II. There are symbols used to express these.

   A. The symbol (>) is used for "greater than."

   B. The symbol (<) is used for "less than."

   EXAMPLE: 1. 6 + 7 = 13 7 + 7 = 14
   6 + 7 is less than 7 + 7 or
   6 + 7 < 7 + 7

   2. 375 is greater than 316 + 20 or
   375 > 316 + 20

GREATER THAN	LESS THAN
$10 > 9$	$7 > 6$
$17 > 15$	$15 < 17$
$21 > 20$	$37 < 38$

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 12--GREATER THAN/LESS THAN

Directions: Place the correct symbol (> or <) between the following sets of numbers.

EXAMPLE:

1. 16 + 3 ___?___ 17 + 3
   19 ___?___ 20
   19 ___<___ 20
2. 7 _______ 3 + 2
3. 3 + 10 _______ 6 + 6
4. 5 + 3 _______ 9
5. 523 _______ 520 + 5
6. 17 _______ 6 + 7
7. 435 _______ 431 + 5
8. 18 _______ 10 + 7
9. 7 _______ 3 + 5
10. 9 + 7 _______ 14
11. 6 _______ 4 + 3
12. 8 _______ 2 + 7
13. 3 _______ 2 + 0
14. 727 _______ 827
15. 925 _______ 825
16. 5 + 2 _______ 0 + 6
17. 16 + 24 _______ 41
18. 75 + 47 _______ 121
19. 35 + 57 _______ 82
20. 95 + 38 _______ 124

ACTIVITY

UNIT II

ADDING WHOLE NUMBERS

ACTIVITY SHEET 13--TRUE/FALSE

Directions: Read the following problems and circle T for True or F for False.

T F 1. Three hundred eleven is > 312.

T F 2. Five thousand two hundred twenty-four < 5,225

T F 3. Nine hundred seventy-three is > 873.

T F 4. Sixty-one is < 60.

T F 5. Eighty-six is > 85.

T F 6. Twenty thousand three hundred seven is > 20,308.

T F 7. Eleven thousand four hundred fifty-three is < 11,454.

T F 8. Fifteen thousand three hundred is > 14,325.

T F 9. Eight hundred ninety-seven is < 895.

T F 10. Six hundred twenty-nine is > 628.

ACTIVITY

UNIT II

ADDING WHOLE NUMBERS

UNIT TEST--PART 1

Match the terms with their definitions by placing the correct letter in the blanks at the left.

_____ 1. Add

_____ 2. Addends

_____ 3. Equal

_____ 4. Greater than

_____ 5. Less than

_____ 6. Set

_____ 7. Sum

_____ 8. Unequal

_____ 9. Whole number

a. a number used for counting

b. the result of adding numbers

c. two things that are the same measure, quantity, amount, or number

d. combining the values of two or more numbers to form a larger number

e. number to be added

f. two things that are not the same measure, quantity, amount, or number

g. a number of things of the same kind that belong or are used together

h. lower in value

i. higher in value

UNIT II

ADDING WHOLE NUMBERS

UNIT TEST--PART 2

Work the addition problems below and check the sums.

1. $\begin{array}{r} 6 \\ +\ 3 \\ \hline \end{array}$

2. $\begin{array}{r} 7 \\ +\ 2 \\ \hline \end{array}$

3. 4 + 5 = _____

4. 1 + 7 = _____

5. $\begin{array}{r} 7 \\ +\ 5 \\ \hline \end{array}$

6. $\begin{array}{r} 8 \\ +\ 3 \\ \hline \end{array}$

7. 8 + 4 = _____

8. 7 + 6 = _____

9. $\begin{array}{r} 2 \\ 4 \\ +\ 1 \\ \hline \end{array}$

10. $\begin{array}{r} 1 \\ 6 \\ +\ 2 \\ \hline \end{array}$

11. 9 + 5 + 5 = _____

12. 6 + 3 + 4 = _____

13. $\begin{array}{r} 20 \\ +\ \ 6 \\ \hline \end{array}$

14. $\begin{array}{r} 96 \\ +\ \ 7 \\ \hline \end{array}$

15. $\begin{array}{r} 67 \\ 23 \\ +\ 75 \\ \hline \end{array}$

16. 16 + 29 + 75 = _______

17. $\begin{array}{r} 5946 \\ +\ 3897 \\ \hline \end{array}$

18. $\begin{array}{r} 8544 \\ 3763 \\ 2198 \\ +\ 3589 \\ \hline \end{array}$

19. $\begin{array}{r} 7 \\ 507 \\ 24 \\ 7{,}634 \\ +\ 52{,}386 \\ \hline \end{array}$

20. On each of three days, a crew of four workers worked seven hours. What is the total number of hours worked by this crew? __________

UNIT II

ADDING WHOLE NUMBERS

UNIT TEST--PART 3

A. Place the correct symbol (= or ≠) between the following sets of numbers.

1. 6 + 4 _____ 10
2. 345 + 1 _____ 1 + 345
3. 150 + 150 _____ 301
4. 9 + 2 _____ 5 + 6
5. 1 + 7 _____ 4 + 6
6. 6 + 11 _____ 17
7. 6 + 0 _____ 2 + 4
8. 17 + 75 _____ 62 + 40
9. 10 + 1 _____ 11
10. 17 _____ 9 + 7

B. Read the following problems and circle T for True or F for False.

T F 1. 11 + 20 ≠ 31

T F 2. 15 + 14 = 29

T F 3. 3 + 9 = 12

T F 4. 14 + 13 ≠ 17

T F 5. 40 + 22 = 61

T F 6. 25 + 27 = 53

T F 7. 7 + 11 = 18

T F 8. 12 + 5 = 17

T F 9. 37 + 15 ≠ 52

T F 10. 21 + 21 ≠ 41

UNIT II

ADDING WHOLE NUMBERS

UNIT TEST--PART 4

A. Place the correct symbol (> or <) between the following sets of numbers.

1. 3 + 10 _____ 6 + 6

2. 8 _____ 2 + 7

3. 9 + 7 _____ 14

4. 925 _____ 825

5. 35 + 57 _____ 82

6. 75 + 47 _____ 121

7. 5 + 3 _____ 9

8. 6 _____ 4 + 3

9. 5 + 2 _____ 0 + 6

10. 95 + 38 _____ 124

B. Read the following problems and circle T for True or F for False.

T F 1. Twenty thousand three hundred seven is > 20,308.

T F 2. Nine hundred seventy-three is > 873

T F 3. Eighty-six is > 85.

T F 4. Eight hundred ninety-seven is < 895.

T F 5. Six hundred twenty-nine is > 628.

UNIT III

SUBTRACTING WHOLE NUMBERS

UNIT OBJECTIVE

After completing this unit, the student will be able to subtract whole numbers. This knowledge will be evidenced through demonstration and by successfully completing the unit test.

SPECIFIC OBJECTIVES

In completing this unit of instruction, the student will:

1. Subtract a one-digit number from another one-digit number and check the answer
2. Subtract a one-digit number from a two-digit number without "borrowing" and check the answer
3. Subtract a one-digit number from a two-digit number which requires "borrowing" and check the answer
4. Subtract a two-digit number from another two-digit number and check the answer
5. Subtract a three, four, or five-digit subtrahend from a three, four, or five-digit minuend and check the answer
6. Solve a word problem involving subtraction of whole numbers
7. Solve a word problem involving a combination of addition and subtraction of whole numbers

UNIT III

SUBTRACTING WHOLE NUMBERS

NOTES TO THE INSTRUCTOR

I. Objective Sheet

   A. Discuss the unit objective with the students.

   B. Discuss each specific objective with the students.

   C. Have the students complete the objectives in a sequence best suited to your classroom.

   D. Add any objectives necessary to meet fully the needs of the unit and the student.

II. Pre/Post Test

   A. The Pre/Post Test may be used to determine students' knowledge of information prior to beginning the unit.

   B. The Pre/Post Test is divided into parts to correspond with each Information Sheet.

      1. The student may not need to cover each Information Sheet.

      2. The teacher may use the test to determine the area of information the student may need help with.

   C. The Pre/Post Test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

   A. INFORMATION SHEET 1--TERMS AND DEFINITIONS

      1. Stress to the students the importance of understanding the terms used in working subtraction problems.

      2. Use ACTIVITY SHEET 1--MATCHING TERMS to reinforce this area of information.

   B. INFORMATION SHEET 2--SUBTRACTION

      1. Explain the meaning of subtraction.

      2. Show the students the symbol (-) used to indicate subtraction.

      3. Show TM-1--SUBTRACTION to reinforce this area of information.

      4. Discuss the importance of correctly setting up a subtraction problem.

5. Show TM-2--SETTING UP YOUR PROBLEM to reinforce this area of information.
6. Explain the names given to each part of the subtraction problem.
7. Show TM-3--PARTS OF SUBTRACTION to reinforce this area of information.
8. Explain to the students how to check their work by using addition.
9. Show TM-4--CHECKING YOUR WORK to reinforce this area of information.
10. Remind students that this can be done without writing the problem again.
11. Use the following Activity Sheets to meet fully the objectives of this unit.
    a. ACTIVITY SHEET 2--ONE-DIGIT SUBTRACTION
    b. ACTIVITY SHEET 3--TWO-DIGIT SUBTRACTION
    c. ACTIVITY SHEET 4--TWO-DIGIT SUBTRACTION
    d. ACTIVITY SHEET 5--TWO-DIGIT SUBTRACTION
    e. ACTIVITY SHEET 6--LARGER NUMBER SUBTRACTION
    f. ACTIVITY SHEET 7--ADDITION AND SUBTRACTION OF WHOLE NUMBERS
    g. ACTIVITY SHEET 8--READ AND WORK
    h. ACTIVITY SHEET 9--READ AND WORK

VI. Answers to Pre/Post Test

A. Answers are based on total information covered in this unit.

B. Right and wrong answers may assist the teacher in discovering individual student weaknesses.

V. Answers to Activity Sheets

A. Some of the Activity Sheets will vary according to training and should be graded individually.

B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

A. The Unit Test is divided into two parts.

1. Each part covers one Information Sheet.
2. Each part uses various methods of testing.

B. Various approaches may be used in testing.

  1. Give each part of the test after the student has completed the information area or sheet.

  2. Give the entire test upon completion of all the Information and Activity Sheets.

  3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

C. Add test parts corresponding to any information areas or sheets added to the unit.

VII. Answers to Unit Tests

A. Answers are based on total information covered in the unit.

B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

A. Bitter, Gary G. et al. McGraw-Hill Mathematics K-8. New York: Webster Division, McGraw-Hill Book Company, 1981.

B. Deans, Edwina. et al. Exploring Mathematics. New York: American Book Company, 1963.

C. Goozner, Calman. Arithmetic Skills Workbook. New York: AMSCO School Publications, Inc., 1973.

UNIT III

SUBTRACTING WHOLE NUMBERS

ANSWERS TO PRE/POST TEST

A. 1. b
2. c
3. a

B. 1. 1
2. 5
3. 60
4. 84
5. 19
6. 3
7. 293

ANSWERS TO TEST

UNIT III

SUBTRACTING WHOLE NUMBERS

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1

1. B
2. E
3. D
4. A
5. C

587 minuend
- 352 subtrahend
235 difference

ACTIVITY SHEET 2

1. 2
2. 1
3. 3
4. 7
5. 1
6. 8
7. 5
8. 5
9. 4
10. 4
11. 6
12. 0
13. 8
14. 3
15. 2
16. 3
17. 4
18. 0
19. 1
20. 1

ACTIVITY SHEET 3

1. 11
2. 10
3. 30
4. 11
5. 11
6. 45
7. 60
8. 12
9. 42
10. 32
11. 94
12. 11
13. 32
14. 71
15. 10
16. 11
17. 13
18. 21
19. 92
20. 71

ACTIVITY SHEET 4

1. 7
2. 7
3. 4
4. 49
5. 66
6. 43
7. 84
8. 19
9. 64
10. 64
11. 39
12. 89
13. 69
14. 88
15. 22
16. 15
17. 59
18. 68
19. 79
20. 61

ACTIVITY SHEET 5

1. 24
2. 19
3. 68
4. 29
5. 9
6. 19
7. 59
8. 3
9. 9
10. 17
11. 38
12. 35
13. 7
14. 19
15. 6
16. 8
17. 8
18. 26
19. 8
20. 14

ACTIVITY SHEET 6

1. 562
2. 329
3. 529
4. 568
5. 208
6. 369
7. 742
8. 173
9. 293
10. 349
11. 12
12. 2,111
13. 719
14. 9,049
15. 4,754
16. 68,479
17. 8,889
18. 22,019
19. 7,101
20. 17,776

ACTIVITY SHEET 7

Across

1. 35
3. 75
4. 4
5. 1856
7. 9
8. 287
9. 2241
12. 5241
14. 423
15. 68
17. 4542
18. 140
19. 29
20. 89
21. 329
22. 1701
24. 74
25. 574
26. 9990
27. 1353
29. 3761
30. 9
31. 6,762
32. 0
33. 33
34. 44

Down

1. 3757
2. 556
4. 4923
5. 1242
6. 881
9. 220
11. 16200
12. 55941
13. 24
14. 449
16. 891
17. 487
18. 124
21. 373
22. 1962
23. 791
25. 5590
26. 976
29. 3734
31. 634

ACTIVITY SHEET 8

1. 34 inches
2. 3,027 square ft.
3. 915 sq. ft.
4. 303,418 bd. ft.
5. 475 c. yd.
6. $85
7. 2,766 ft.
8. 103 mi.
9. 5 ft.
10. 29

ACTIVITY SHEET 9

1. 2,222 bd. ft.
2. 871
3. 9,956
4. 83
5. 324 lbs.
6. 239 ft.
7. 38
8. 14,145
9. 78 mi.
10. 319 lbs.

UNIT III

SUBTRACTING WHOLE NUMBERS

ANSWERS TO UNIT TEST

PART 1

A.

327	minuend
- 189	subtrahend
138	difference

B.
1. e
2. d
3. a
4. b
5. c

PART 2

A.
1. 1
2. 7
3. 5
4. 0
5. 2
6. 11
7. 60
8. 32
9. 84
10. 64
11. 19
12. 19
13. 3
14. 293
15. 4,754

B.
1. 556
2. 3,027
3. 5
4. 239
5. 14,145

ANSWERS TO TEST

UNIT III

SUBTRACTING WHOLE NUMBERS

PRE/POST TEST

A. Match the following terms with their definitions by placing the correct letter in the blanks at the left.

_____ 1. Borrowing

_____ 2. Difference

_____ 3. Subtract

a. taking the value of a smaller number away from the value of a larger number

b. using one from the digit to the left in order to subtract

c. the number that results from subtraction

B. Work the subtraction problems and check your work by addition.

1. $\begin{array}{r} 4 \\ -\ 3 \\ \hline \end{array}$ 2. $\begin{array}{r} 9 \\ -\ 4 \\ \hline \end{array}$ 3. $\begin{array}{r} 65 \\ -\ 5 \\ \hline \end{array}$ 4. $\begin{array}{r} 91 \\ -\ 7 \\ \hline \end{array}$

5. $\begin{array}{r} 57 \\ -\ 38 \\ \hline \end{array}$ 6. $\begin{array}{r} 71 \\ -\ 68 \\ \hline \end{array}$ 7. $\begin{array}{r} 756 \\ -\ 463 \\ \hline \end{array}$

UNIT III

SUBTRACTING WHOLE NUMBERS

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. Borrowing--using one from the digit to the left in order to subtract
2. Difference--the number that results from subtraction
3. Minuend--the larger number used in subtracting
4. Subtract--taking the value of a smaller number away from the value of a larger number
5. Subtrahend--the smaller number; the number that is subtracted

UNIT III

SUBTRACTING WHOLE NUMBERS

ACTIVITY SHEET 1--MATCHING TERMS

Directions: Match the terms below with their definitions by placing the correct letter in the blanks at the left.

_____ 1. Borrowing

_____ 2. Difference

_____ 3. Minuend

_____ 4. Subtract

_____ 5. Subtrahend

a. taking the value of a smaller number away from the value of a larger number

b. using one from the digit to the left in order to subtract

c. the smaller number; the number that is subtracted

d. the larger number used in subtracting

e. the number that results from subtracti

Write the names of the parts of the subtraction problem below in the blank beside the problem.

$$\begin{array}{rl} 587 & \underline{\hspace{4cm}} \\ \underline{-\ 352} & \underline{\hspace{4cm}} \\ 235 & \underline{\hspace{4cm}} \end{array}$$

ACTIVITY

UNIT III

SUBTRACTING WHOLE NUMBERS

INFORMATION SHEET 2--SUBTRACTION

I. Subtraction Is the Opposite of Addition.

A. When you subtract, you take away a smaller number from a larger number.

B. The symbol used for subtraction is (-).

C. This symbol is placed in front of the numbers to be subtracted.

EXAMPLE: 20 - 7 or $\begin{array}{r} 20 \\ -\ 7 \\ \hline \end{array}$

II. Setting Up a Subtraction Problem

A. When you set up a subtraction problem, it is important that you keep the columns lined up correctly.

B. Make sure the ones digit is under the ones digit and the tens digit is under the tens digit and so on.

EXAMPLE: $\begin{array}{r} 47 \\ -\ 20 \\ \hline \end{array}$

III. Names of Numbers in Subtraction Problems

A. The numbers used in subtraction problems have names.

B. The larger number from which you are subtracting is called the "minuend."

C. The number you are subtracting from it is called the "subtrahend."

D. The answer you get when you work the problem is called the "difference."

EXAMPLE: 398 --------- minuend
- 147 --------- subtrahend
251 --------- difference

IV. Checking Your Work

A. It is very easy to check your work when subtracting. Remember that the:

minuend - subtrahend = difference

B. In order to check your work you reverse the order.

difference + subtrahend = minuend

C. You can do this without writing the problem again.

EXAMPLE:

$$\begin{array}{l} 398 \\ \left.\begin{array}{r} -\ 147 \\ \hline 251 \end{array}\right\} \begin{array}{l}\text{check by}\\ \text{adding these}\end{array} \\ \underline{\overline{398}} \end{array}$$

SUBTRACTION

20 – 7

OR

$$\begin{array}{r} 20 \\ -7 \\ \hline \end{array}$$

TM-1

SETTING UP YOUR PROBLEM

$$\begin{array}{r} 47 \\ -\underline{20} \\ \hline \end{array}$$

PARTS OF SUBTRACTION

$$\begin{array}{rl} \mathbf{398} & \longleftarrow \text{minuend} \\ -\underline{\mathbf{147}} & \longleftarrow \text{subtrahend} \\ \mathbf{251} & \longleftarrow \text{difference} \end{array}$$

CHECKING YOUR WORK

$$\begin{array}{r} 398 \\ -\,147 \\ \hline 251 \\ \hline 398 \end{array}$$

Check by adding these

TM-4

UNIT III

SUBTRACTING WHOLE NUMBERS

ACTIVITY SHEET 2--ONE-DIGIT SUBTRACTION

Directions: Work the subtraction problems below and check your work by addition.

1. $\begin{array}{r} 2 \\ \underline{-\ 0} \end{array}$
2. $\begin{array}{r} 4 \\ \underline{-\ 3} \end{array}$
3. $\begin{array}{r} 5 \\ \underline{-\ 2} \end{array}$
4. $\begin{array}{r} 8 \\ \underline{-\ 1} \end{array}$
5. $\begin{array}{r} 7 \\ \underline{-\ 6} \end{array}$
6. $\begin{array}{r} 8 \\ \underline{-\ 0} \end{array}$
7. $\begin{array}{r} 8 \\ \underline{-\ 3} \end{array}$
8. $\begin{array}{r} 9 \\ \underline{-\ 4} \end{array}$
9. $\begin{array}{r} 5 \\ \underline{-\ 1} \end{array}$
10. $\begin{array}{r} 7 \\ \underline{-\ 3} \end{array}$

11. 6 - 0 = _____
12. 4 - 4 = _____
13. 9 - 1 = _____
14. 7 - 4 = _____
15. 6 - 4 = ____
16. 8 - 5 = _____
17. 9 - 5 = _____
18. 7 - 7 = _____
19. 9 - 8 = _____
20. 3 - 2 = _____

UNIT III

SUBTRACTING WHOLE NUMBERS

ACTIVITY SHEET 3--TWO-DIGIT SUBTRACTION

Directions: Work the subtraction problems below and check your work by addition.

1. $\begin{array}{r} 19 \\ -\ 8 \\ \hline \end{array}$
2. $\begin{array}{r} 11 \\ -\ 1 \\ \hline \end{array}$
3. $\begin{array}{r} 30 \\ -\ 0 \\ \hline \end{array}$
4. $\begin{array}{r} 17 \\ -\ 6 \\ \hline \end{array}$
5. $\begin{array}{r} 13 \\ -\ 2 \\ \hline \end{array}$
6. $\begin{array}{r} 48 \\ -\ 3 \\ \hline \end{array}$
7. $\begin{array}{r} 65 \\ -\ 5 \\ \hline \end{array}$
8. $\begin{array}{r} 13 \\ -\ 1 \\ \hline \end{array}$
9. $\begin{array}{r} 42 \\ -\ 0 \\ \hline \end{array}$
10. $\begin{array}{r} 39 \\ -\ 7 \\ \hline \end{array}$
11. $\begin{array}{r} 97 \\ -\ 3 \\ \hline \end{array}$
12. $\begin{array}{r} 18 \\ -\ 7 \\ \hline \end{array}$
13. $\begin{array}{r} 37 \\ -\ 5 \\ \hline \end{array}$
14. $\begin{array}{r} 71 \\ -\ 0 \\ \hline \end{array}$
15. $\begin{array}{r} 19 \\ -\ 9 \\ \hline \end{array}$
16. $\begin{array}{r} 15 \\ -\ 4 \\ \hline \end{array}$
17. $\begin{array}{r} 16 \\ -\ 3 \\ \hline \end{array}$
18. $\begin{array}{r} 29 \\ -\ 8 \\ \hline \end{array}$
19. $\begin{array}{r} 98 \\ -\ 6 \\ \hline \end{array}$
20. $\begin{array}{r} 75 \\ -\ 4 \\ \hline \end{array}$

ACTIVITY

UNIT III

SUBTRACTING WHOLE NUMBERS

ACTIVITY SHEET 4--TWO-DIGIT SUBTRACTION

Directions: Work the subtraction problems below and check your work by addition.

1. $\begin{array}{r} 15 \\ -\ 8 \\ \hline \end{array}$	2. $\begin{array}{r} 12 \\ -\ 5 \\ \hline \end{array}$	3. $\begin{array}{r} 13 \\ -\ 9 \\ \hline \end{array}$	4. $\begin{array}{r} 58 \\ -\ 9 \\ \hline \end{array}$	5. $\begin{array}{r} 75 \\ -\ 9 \\ \hline \end{array}$
6. $\begin{array}{r} 52 \\ -\ 9 \\ \hline \end{array}$	7. $\begin{array}{r} 91 \\ -\ 7 \\ \hline \end{array}$	8. $\begin{array}{r} 26 \\ -\ 7 \\ \hline \end{array}$	9. $\begin{array}{r} 70 \\ -\ 6 \\ \hline \end{array}$	10. $\begin{array}{r} 73 \\ -\ 9 \\ \hline \end{array}$
11. $\begin{array}{r} 45 \\ -\ 6 \\ \hline \end{array}$	12. $\begin{array}{r} 97 \\ -\ 8 \\ \hline \end{array}$	13. $\begin{array}{r} 76 \\ -\ 7 \\ \hline \end{array}$	14. $\begin{array}{r} 91 \\ -\ 3 \\ \hline \end{array}$	15. $\begin{array}{r} 31 \\ -\ 9 \\ \hline \end{array}$
16. $\begin{array}{r} 22 \\ -\ 7 \\ \hline \end{array}$	17. $\begin{array}{r} 63 \\ -\ 4 \\ \hline \end{array}$	18. $\begin{array}{r} 70 \\ -\ 2 \\ \hline \end{array}$	19. $\begin{array}{r} 80 \\ -\ 1 \\ \hline \end{array}$	20. $\begin{array}{r} 63 \\ -\ 2 \\ \hline \end{array}$

UNIT III

SUBTRACTING WHOLE NUMBERS

ACTIVITY SHEET 5--TWO-DIGIT SUBTRACTION

Directions: Work the subtraction problems below and check your work by addition.

1. 49 - 25
2. 57 - 38
3. 97 - 29
4. 55 - 26
5. 48 - 39
6. 77 - 58
7. 88 - 29
8. 71 - 68
9. 42 - 33
10. 33 - 16
11. 72 - 34
12. 92 - 57

13. 76 - 69 = ________
14. 92 - 73 = ________
15. 23 - 17 = ________
16. 37 - 29 = ________
17. 47 - 39 = ________
18. 54 - 28 = ________
19. 67 - 59 = ________
20. 43 - 29 = ________

ACTIVITY

UNIT III

SUBTRACTING WHOLE NUMBERS

ACTIVITY SHEET 6--LARGER NUMBER SUBTRACTION

Directions: Work the subtraction problems below and check your work by addition.

1. 593 - 26
2. 336 - 7
3. 557 - 28
4. 644 - 76
5. 251 - 43
6. 653 - 284
7. 927 - 185
8. 814 - 641
9. 756 - 463
10. 738 - 389
11. 1,204 - 1,192
12. 3,705 - 1,594
13. 2,705 - 1,986
14. 9,700 - 651
15. 5,805 - 1,051
16. 76,342 - 7,863
17. 23,456 - 14,567
18. 30,001 - 7,982
19. 7,200 - 99
20. 21,500 - 3,724

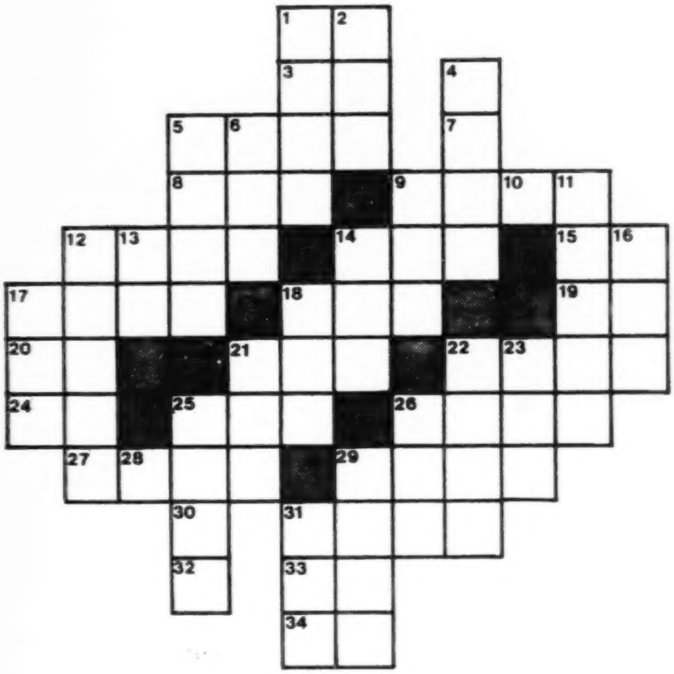
ACTIVITY

UNIT III

SUBTRACTING WHOLE NUMBERS

ACTIVITY SHEET 7--ADDITION AND SUBTRACTION OF WHOLE NUMBERS

Directions: Work each work problem below. Place your answers in the puzzle.



ACROSS

1. A painter worked 8 hours Monday, 9 hours Tuesday, 6 hours Wednesday, 0 hours Thursday and 12 hours Friday. How many hours did the painter work that week?

3. To connect a boiler, a plumber had to use the following lengths of pipe: 17", 8", 7", 6", 12", 16", and 9". How many inches of pipe did the plumber use?

4. For wiring a house, an electrician bought 19 light fixtures, only to discover 15 were needed. How many light fixtures were left?

DOWN

1. Add the following: 171; 1,463; 599; 914; 322; 288.

2. A farmer bought a pickup truck for $3,420. The trade allowance was $1,864, and the farmer paid $1,000 down in cash. What was the balance owed on the truck?

4. From 97,381, take 92,458.

5. On some jobs, a time card must be filled out so that the cost for each job can be calculated. If a worker worked 5 jobs requiring the following hours, 319, 45, 567, 216 and 95 hours, what was the total time for these jobs?

ACROSS

5. Mr. Johnson went out of town on business. The first day he drove 395 miles; the second day 419 miles; the third day 524; on the fourth and fifth days he drove 259 miles each day. How many miles did he drive?

7. Find the difference between 976 and 967.

8. Take 213 from 500.

9. Find the difference between 5,719 and 3,478.

12. 7,960 - 2,719 = ________

14. 64 + 89 + 76 + 54 + 57 + 83 = _____

15. Write the number 17 four times and add.

17. Mrs. Jones' speedometer read 39,199 miles at the start of a trip. At the end of the trip it was 43,741 miles. How many miles did she travel?

18. During the year, Pineview High School played 11 football games. Their scores of the games were: 17, 3, 21, 12, 6, 35, 9, 13, 15, 7, and 2. How many points did they score in all eleven games?

19. 4,968 - 4,939 = ________

20. From the sum of 97 and 49 take 57.

21. Find the sum of the following: 13 + 21 + 47 + 39 + 93 + 15 + 101.

22. 316 + 427 + 352 + 293 + 313 = _____

24. Write 13 five times and add 9 to the answer.

25. Add 138 to the sum of 166, 153 and 117.

26. 3,160 + 3,410 + 3,420 = ________

27. Find the sum of 227, 191, 37, 103 293, 345 and 157.

DOWN

6. A tool crib contains the following items: 437 cotter pins, 123 1" washers, 219 drill bits, and 102 3" bolts. How many items are there in all?

9. A service station used the following amounts of gasoline from its 2,500 gallon storage tank: 196 gals.; 297 gals.; 314 gals.; 349 gals.; 416 gals.; 352 gals.; and 356 gals. How many gallons of gasoline remained in the storage tank?

11. Find the total weight of five machines each weighing 3,240 lbs., respectively.

12. From 837,619 take 781,678.

13. Four pieces measuring 41 inches, 37 inches, 23 inches, and 52 inches were cut from a steel rod 177 inches long. What length of rod is left?

14. 1,000 - 551 = ________

16. Find the sum of the following: 19 + 39 + 59 + 79 + 99 + 129 + 149 + 169 + 149.

17. From the sum of 343 and 458 take 314.

18. A pig weighs 178 lbs. and a lamb weighs 54 lbs. What is the difference in their weights?

21. From the difference of 427 and 365 add 311.

22. Take 74,146 from 76,108.

23. Find the sum of the following: 246 + 128 + 517 + 157 take 257.

25. During one month an automobile firm had the following sales: first week, 49 trucks, 1,434 cars; second week, 75 trucks and 1,107 cars; third week, 87 trucks, 1,238 cars; and the fourth week, 129 trucks, 1,471 cars. What was the total number sold that month?

26. From 1,098 take 122.

ACROSS

29. Add together the following:
193, 251, 98, 334, 500, 421, 79, 409, 379, 486, 121, 133, 357

30. Take the sum of 173, 113, and 101 and subtract from 396.

31. To 2,935 add 3,827.

32. From 97 subtract 97.

33. Subtract 67 from 100.

34. Find the difference between 113 and 69.

DOWN

29. From 11,111 subtract 7,377.

31. To the difference of 1,000 and 634 add 268.

UNIT III

SUBTRACTING WHOLE NUMBERS

ACTIVITY SHEET 8--READ AND WORK

ACTIVITY

Directions: Read each word problem below and work. Place your answer in the blank.

1. A length of stock 38 inches long is cut from a board 72 inches long. What is the length of the remaining piece? ________

2. How many square feet of plywood remain from an original supply of 10,000 square feet after 6,973 square feet are used? ________

3. A basement floor contains 1,650 square feet. How much area remains to be painted after 735 square feet are covered? ________

4. A lumber dealer has 632,000 bd. ft. (board feet) of native pine on hand. If the dealer sells 328,582 bd. ft., how many board feet remain? ________

5. The excavation contract for the foundation of a house calls for the removal of 650 cubic yards of earth. How much remains to be excavated after 175 cubic yards are removed? ________

6. A carpenter contracted to build a redwood deck for $450. The material, labor, and other costs total $365. What is the profit? ________

7. From a supply of 7,326 linear feet of baseboard, a total of 4,560 feet are used. How many feet remain in the supply? ________

8. Driver number one drives a car 169 miles while driver number two drives a car 272 miles. How much farther does number two drive than number one? ________

9. A car measures 16 feet in length; the garage is 21 feet long inside. How much clearance is there when the car is parked in the garage? ________

10. How many apples did Amanda have left after she gave 15 of her 44 apples to Sally? ________

UNIT III

SUBTRACTING WHOLE NUMBERS

ACTIVITY SHEET 9--READ AND WORK

Directions: Read each word problem below and work. Place your answer in the blank.

1. A contractor bought 6,000 bd. ft. of oak flooring. The contractor used 1,928 bd. ft. on one house and 1,850 on another. How much flooring was left? ________

2. From an inventory of 1,272 sheets or 1/4-inch paneling, a dealer sold the following number of sheets: 15, 73, 87, 121, 53, 22, and 30. How many sheets of paneling were left? ________

3. A printer has a run of 32,000 impressions to print. If on the first day the printer prints 10,789 and on the second day 11,255, how many more impressions are left to be printed to complete the job? ________

4. A stock clerk fills orders for 6, 8, 4, 16, 12, and 24 spark plugs from a stock of 153 plugs. How many plugs are left in stock after filling the orders? ________

5. An inventory sheet shows 365 pounds of body lead. If 24 pounds are used on one job and 17 pounds on a second job, how many pounds are left? ________

6. A 250 foot coil of ignition wire is taken out of stock. The following lengths are cut off: 2 feet, 3 feet, 1 foot, 3 feet, and 2 feet. How much wire is left in the coil? ________

7. A contractor has 33 workers on one job, 56 on another, and 42 on another. During the day 93 workers walk off the job. How many workers are left to work for the contractor? ________

8. A mason purchases 48,000 bricks, of which 4,850 are used on one job, 12,720 on a second job, and 16,285 on a third. How many bricks will be left? ________

9. Peggy took two trips during summer vacation. On one trip she traveled 468 miles and on the other trip she traveled 546 miles. What is the difference? ________

10. A 1,000 foot reel of fairly large stranded cable weighs 1,106 pounds. Of this, 365 pounds are used on a job from the switch to the first pull box, and 422 pounds are used from the first box to the last box. How many pounds of wire are left on the reel?

UNIT III

SUBTRACTING WHOLE NUMBERS

UNIT TEST--PART 1

A. Identify the parts of the subtraction problem below. Use words provided - (Not all words will be used). Write the correct word in the blanks beside the problem.

Borrowing
Difference
Minuend
Subtract
Subtrahend

$$\begin{array}{r} 327 \\ -\ 189 \\ \hline 138 \end{array}$$

327 ______________
- 189 ______________
138 ______________

B. Match the following terms with their definitions by placing the correct letter in the blanks at the left.

_____ 1. Borrowing
_____ 2. Difference
_____ 3. Minuend
_____ 4. Subtract
_____ 5. Subtrahend

a. the larger number used in subtracting
b. taking away the value of a smaller number from the value of a larger number
c. the smaller number; the number that is subtracted
d. the number that results from subtraction
e. to use one from the digit to the left in order to subtract

UNIT III

SUBTRACTING WHOLE NUMBERS

UNIT TEST--PART 2

A. Work the subtraction problems and check your work by addition.

1. $\begin{array}{r} 4 \\ -\ 3 \\ \hline \end{array}$
2. $\begin{array}{r} 8 \\ -\ 1 \\ \hline \end{array}$
3. $\begin{array}{r} 9 \\ -\ 4 \\ \hline \end{array}$
4. $\begin{array}{r} 7 \\ -\ 7 \\ \hline \end{array}$
5. $\begin{array}{r} 6 \\ -\ 4 \\ \hline \end{array}$

6. $\begin{array}{r} 17 \\ -\ \ 6 \\ \hline \end{array}$
7. $\begin{array}{r} 65 \\ -\ \ 5 \\ \hline \end{array}$
8. $\begin{array}{r} 37 \\ -\ \ 5 \\ \hline \end{array}$
9. $\begin{array}{r} 91 \\ -\ \ 7 \\ \hline \end{array}$
10. $\begin{array}{r} 73 \\ -\ \ 9 \\ \hline \end{array}$

11. $\begin{array}{r} 57 \\ -\ 38 \\ \hline \end{array}$
12. $\begin{array}{r} 77 \\ -\ 58 \\ \hline \end{array}$
13. $\begin{array}{r} 71 \\ -\ 68 \\ \hline \end{array}$
14. $\begin{array}{r} 756 \\ -\ 463 \\ \hline \end{array}$
15. $\begin{array}{r} 5805 \\ -\ 1051 \\ \hline \end{array}$

B. Read the following word problems and work. Write your answer in the blanks.

1. A farmer bought a pickup truck for $3,420. The trade allowance was $1,864 and the farmer paid $1,000 down in cash. What was the balance owed on the truck? ________

2. How many square feet of plywood remain from an original supply of 10,000 square feet after 6,973 square feet are used? ________

3. A car measures 16 feet in length; the garage is 21 feet long inside. How much clearance is there when the car is parked in the garage? ________

4. A 250 foot coil of ignition wire is taken out of stock. The following lengths are cut off: 2 feet, 3 feet, 1 foot, 3 feet, and 2 feet. How much wire is left in the coil? ________

5. A mason purchases 48,000 bricks of which 4,850 are used on one job, 12,720 on a second job, and 16,285 on a third. How many bricks will be left? ________

UNIT IV

MULTIPLYING WHOLE NUMBERS

UNIT OBJECTIVE

After completion of this unit, the student will be able to multiply whole numbers. This knowledge will be evidenced through demonstration and by satisfactorily completing the unit test.

SPECIFIC OBJECTIVES

In completing this unit of instruction, the student will:

1. Multiply two one-digit numbers and check the answer
2. Multiply using the special case of 0 or 1 and check the answer
3. Multiply a two-digit number by a one-digit number without having to "carry" and check the answer
4. Multiply a two-digit number by a one-digit number when it is necessary to "carry" and check the answer
5. Multiply two two-digit factors and check the answer
6. Multiply three one-digit factors and check the answer
7. Multiply three, four, and five-digit multiplicands by two and three-digit multipliers
8. Solve short word problems involving the multiplication of whole numbers
9. Solve addition-multiplication combination problems
10. Solve subtraction-multiplication combination problems

UNIT IV

MULTIPLYING WHOLE NUMBERS

NOTES TO THE INSTRUCTOR

I. Objective Sheet

   A. Discuss the unit objective with the students.

   B. Discuss each specific objective with the students.

   C. Have the students complete the objectives in a sequence best suited to your classroom.

   D. Add any objectives necessary to meet fully the needs of the unit and the student.

II. Pre/Post Test

   A. The Pre/Post Test may be used to determine students' knowledge of information prior to beginning the unit.

   B. The Pre/Post Test is divided into parts to correspond with each Information Sheet.

      1. The student may not need to cover each Information Sheet.

      2. The teacher may use the test to determine the area of information the student may need help with.

   C. The Pre/Post Test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

   A. INFORMATION SHEET 1--TERMS AND DEFINITIONS

      1. Stress to the students the importance of understanding the terms used in solving multiplication problems.

      2. Use ACTIVITY SHEET 1--CROSSWORD PUZZLE to reinforce this area of information.

   B. INFORMATION SHEET 2--MULTIPLICATION

      1. Explain how multiplication is quicker than addition.

      2. Discuss the symbol used to indicate multiplication, the (x) or "times" sign.

      3. Discuss the names used for each part of the multiplication process.

4. Show TM-1--WHAT ARE THE NAMES? to reinforce this area of information.

5. Explain how to carry numbers when multiplying.

6. Show TM-2--CARRYING IN MULTIPLICATION to reinforce this area of information.

7. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 2--ONE-DIGIT MULTIPLICATION

    b. ACTIVITY SHEET 3--ONE-DIGIT MULTIPLICATION

    c. ACTIVITY SHEET 4--TWO-DIGIT MULTIPLICATION

    d. ACTIVITY SHEET 5--TWO-DIGIT MULTIPLICATION

    e. ACTIVITY SHEET 6--MATHO BINGO

C. INFORMATION SHEET 3--MULTIPLYING WITH TWO OR MORE DIGITS

1. Explain the process for doing multiplication with two or more digits in the multiplier.

2. Explain that the multiplication is done separately.

3. Explain that the product of each of these is a partial answer.

4. Explain that there are steps to follow when multiplying by a multiplier that has two or more digits.

5. Show TM-3 and TM-4--MULTIPLYING WITH TWO OR MORE DIGITS to reinforce this area of information.

6. Explain the process of checking your work.

7. Show TM-5--CHECKING YOUR WORK to reinforce this area of information.

8. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 7--TWO-DIGIT MULTIPLIER

    b. ACTIVITY SHEET 8--MULTIPLYING NUMBERS

    c. ACTIVITY SHEET 9--MULTIPLYING LARGE NUMBERS

    d. ACTIVITY SHEET 10--MULTIPLYING WITH LARGER MULTIPLIERS

    e. ACTIVITY SHEET 11--WORD PROBLEMS

    f. ACTIVITY SHEET 12--MULTIPLE MULTIPLICATION

    g. ACTIVITY SHEET 13--MULTIPLE MULTIPLICATION

    h. ACTIVITY SHEET 14--ARITHMETIC RIDDLES

IV. Answers to Pre/Post Test

A. Answers are based on total information covered in this unit.

B. Right and wrong answers may assist the teacher in discovering individual student weaknesses.

V. Answers to Activity Sheets

A. Some of the Activity Sheets will vary according to training and should be graded individually.

B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

A. The Unit Test is divided into three parts.

1. Each part covers one Information Sheet.

2. Each part uses various methods of testing.

B. Various approaches may be used in testing.

1. Give each part of the test after the student has completed the information in one information area or sheet.

2. Give the entire test upon completion of all the Information and Activity Sheets.

3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

C. Add test parts corresponding to any information areas or sheets added to the unit.

VII. Answers to Unit Tests

A. Answers are based on total information covered in the unit.

B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

1. Burstein, Jules. Skills in Mathematics 2. New York: Cambridge Book Company, 1973.

2. Cass, Angelica W. Skills in Mathematics 1. New York: Cambridge Book Company, 1973.

3. Clark, John R., et al. Growth in Arithmetic. New York: Harcourt, Brace & World, Inc., 1962.

4. Goozner, Calman. Arithmetic Skills Workbook. New York: Harcourt, Brace & World, Inc., 1962.

5. Gundlach, Bernard H. Mathematics 3. River Forest, IL: Laidlaw Brothers, Publishers, 1968.

6. Hunte, Beryl E. Exploring Elementary Mathematics Exercises Teacher's Edition.

UNIT IV

MULTIPLYING WHOLE NUMBERS

ANSWERS TO PRE/POST TEST

A. 1. d
2. a
3. c
4. e
5. b

B. 1. 48
2. 72
3. 42
4. 6
5. 88
6. 249
7. 66
8. 85
9. 78
10. 329

C. 1. 1,110
2. 2,604
3. 315
4. 162
5. 60
6. 35,155
7. 86,194
8. 78,700
9. 79,909,000
10. 39

ANSWERS TO TEST

MULTIPLYING WHOLE NUMBERS

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1

ACROSS

2. multiplier
4. distributive
5. partial
6. factor
7. associative
8. carry

DOWN

1. multiplicand
3. commutative
5. product
7. array

ACTIVITY SHEET 2

1. 6
2. 16
3. 27
4. 28
5. 45
6. 48
7. 42
8. 63
9. 24
10. 56
11. 64
12. 72
13. 18
14. 21
15. 56
16. 36
17. 14
18. 18
19. 81
20. 49

ACTIVITY SHEET 3

1. 0
2. 9
3. 6
4. 0
5. 6
6. 0
7. 3
8. 0
9. 0
10. 0
11. 56
12. 0
13. 9
14. 72
15. 0
16. 6
17. 42
18. 0
19. 1
20. 0

ACTIVITY SHEET 4

1. 88
2. 48
3. 279
4. 128
5. 497
6. 249
7. 546
8. 108
9. 168
10. 276
11. 159
12. 288
13. 166
14. 62
15. 128
16. 364
17. 455
18. 400
19. 66
20. 148

ACTIVITY SHEET 5

1. 68
2. 75
3. 96
4. 57
5. 54
6. 85
7. 38
8. 78
9. 120
10. 90
11. 532
12. 333
13. 504
14. 648
15. 329
16. 234
17. 177
18. 416
19. 316
20. 216

ACTIVITY SHEET 6

Game, no answers.

ACTIVITY SHEET 7

1. 693
2. 527
3. 1,110
4. 2,150
5. 819
6. 6,560
7. 3,294
8. 1,430
9. 1,680
10. 4,757
11. 2,666
12. 2,775
13. 780
14. 1,161
15. 2,320
16. 2,849
17. 3,600
18. 738
19. 2,604
20. 351

ACTIVITY SHEET 8

1. 24
2. 126
3. 64
4. 144
5. 105
6. 14
7. 150
8. 504
9. 336
10. 162
11. 27
12. 343
13. 144
14. 210
15. 270
16. 72
17. 512
18. 60
19. 315
20. 360

ACTIVITY SHEET 9

1. 16,946
2. 47,150
3. 36,112
4. 7,904
5. 43,632
6. 35,155
7. 30,480
8. 57,215
9. 77,910
10. 1,525,259
11. 7,282,064
12. 1,074,480
13. 1,664,936
14. 2,520,762
15. 540,666
16. 86,194
17. 7,498,530
18. 71,750,400
19. 19,536,000
20. 54,095,021

ACTIVITY SHEET 10

1. 7,870
2. 78,700
3. 17,000
4. 8,700
5. 6,700
6. 7,920
7. 89,000
8. 672,800
9. 7,930
10. 79,909,000
11. 763,200
12. 32,400
13. 71,005,000
14. 6,325,000
15. 35,384,000
16. 5,930
17. 32,050,000
18. 769,840
19. 7,000,000
20. 500,000

ACTIVITY SHEET 11

1. 200 ft.
2. 504 ft.
3. $224
4. $35,815
5. 625 yds.
6. 64,500
7. 2,279 ft.
8. $144
9. 1,026 bd. ft.
10. 1,080

ACTIVITY SHEET 12

1. 13
2. 54
3. 35
4. 0
5. 0
6. 8
7. 56
8. 72
9. 68
10. 30
11. 221
12. 1
13. 53
14. 19
15. 0
16. 510
17. 100
18. 1,200
19. $77.50
20. 572 in.

ACTIVITY SHEET 13

1. 12
2. 0
3. 100
4. 30
5. 69
6. 70
7. 1
8. 9
9. 36
10. 10
11. 0
12. 176
13. 44
14. 9,000
15. 100
16. 6,592
17. 50
18. 270
19. 5
20. 21

ACTIVITY SHEET 14

THE ROAD

BECAUSE THEY CANNOT WALK

IN THE GROUND

NONE ONLY BABIES

UNIT IV

MULTIPLYING WHOLE NUMBERS

ANSWERS TO UNIT TEST

PART 1

1. e
2. j
3. a
4. f
5. g
6. b
7. h
8. c
9. i
10. d

PART 2

1. 16
2. 28
3. 48
4. 56
5. 72
6. 0
7. 42
8. 72
9. 0
10. 6
11. 88
12. 249
13. 276
14. 288
15. 66
16. 85
17. 78
18. 504
19. 329
20. 316

PART 3

1. 527
2. 1,110
3. 2,666
4. 2,604
5. 336
6. 315
7. 162
8. 60
9. 16,946
10. 35,155
11. 540,666
12. 86,194
13. 78,700
14. 79,909,000
15. 71,005,000
16. 89,000
17. 504
18. 1,080
19. 221
20. 39

UNIT IV

MULTIPLYING WHOLE NUMBERS

PRE/POST TEST

A. Directions: Match the terms with their definitions by placing the correct letter in the blanks at the left.

_____ 1. Array

_____ 2. Carry

_____ 3. Factor

_____ 4. Multiplier

_____ 5. Product

a. to move from one place to another

b. the answer to the multiplication problem

c. any number multiplied together

d. a number of numerals arranged in rows and columns

e. the number you are multiplying by

B. Directions: Find the product and check by reversing the order of the factors.

1. $\begin{array}{r} 8 \\ \times\ 6 \\ \hline \end{array}$

2. $\begin{array}{r} 9 \\ \times\ 8 \\ \hline \end{array}$

3. 6 x 7 x 1 = _____

4. 3 x 2 x 1 = _____

5. $\begin{array}{r} 22 \\ \times\ 4 \\ \hline \end{array}$

6. $\begin{array}{r} 83 \\ \times\ 3 \\ \hline \end{array}$

7. $\begin{array}{r} 33 \\ \times\ 2 \\ \hline \end{array}$

8. $\begin{array}{r} 17 \\ \times\ 5 \\ \hline \end{array}$

9. $\begin{array}{r} 13 \\ \times\ 6 \\ \hline \end{array}$

10. $\begin{array}{r} 47 \\ \times\ 7 \\ \hline \end{array}$

C. Directions: Find the product and check by reversing the order of the factors.

1. $\begin{array}{r} 74 \\ \times\ 15 \\ \hline \end{array}$

2. $\begin{array}{r} 28 \\ \times\ 93 \\ \hline \end{array}$

3. (7 x 5) x 9 = ______

4. 9 x 9 x 2 = ______

5. 3 x 4 x 5 = ______

6. $\begin{array}{r} 395 \\ \times\ 89 \\ \hline \end{array}$

7. $\begin{array}{r} 607 \\ \times\ 142 \\ \hline \end{array}$

8. $\begin{array}{r} 787 \\ \times\ 100 \\ \hline \end{array}$

9. $\begin{array}{r} 79{,}909 \\ \times\ 1{,}000 \\ \hline \end{array}$

10. (5 x 6) + (3 x 3) = ______

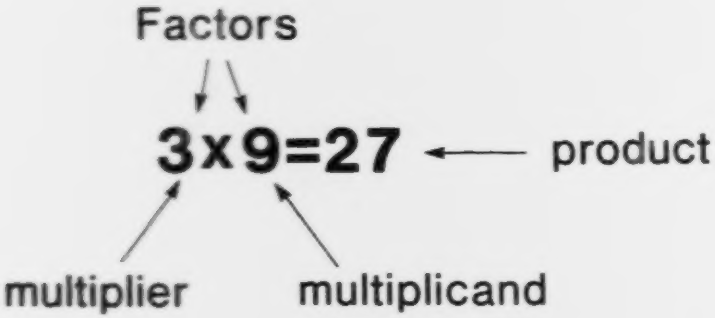
UNIT IV

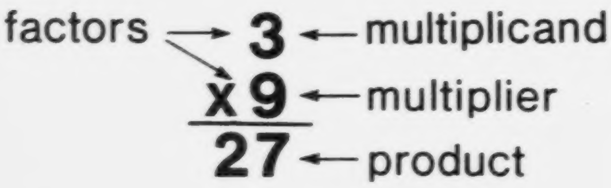
MULTIPLYING WHOLE NUMBERS

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. Array--a number of numerals arranged in rows and columns
2. Associative law of multiplication--makes possible different, but equally correct, ways of grouping the factors in multiplication
3. Carry--moving from one place to another
4. Commutative law of multiplication--the order of factors does not affect the product
5. Distributive law of multiplication with respect to addition--makes possible different ways of doing the multiplication
6. Factor--any number multiplied together
7. Multiplicand--the number being multiplied
8. Multiplier--the number you are multiplying by
9. Partial answer--a part of the total answer
10. Product--the answer to the multiplication problem

WHAT ARE THE NAMES ?


Factors
3x9=27
product
multiplier
multiplicand


factors
3
x 9
27
multiplicand
multiplier
product

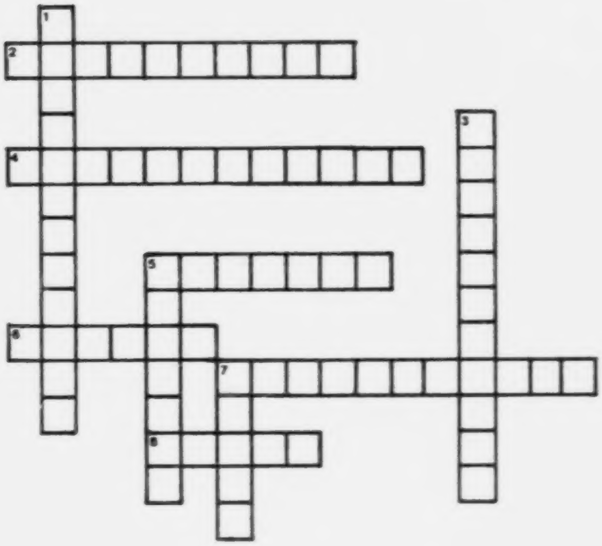
UNIT IV

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 1--CROSSWORD PUZZLE

Directions: Using the words listed below, fill in the blanks in the sentences. Use the words in the blanks to complete the crossword puzzle.

Array
Associative
Carry
Commutative
Distributive
Factor
Multiplicand
Multiplier
Partial
Product



ACTIVITY

ACROSS

2. The number you are multiplying by is called the ______________.

4. The ______________ law of multiplication with respect to addition makes possible different ways of doing multiplication.

5. A ______________ answer is a part of the total answer.

6. A ______________ is any number multiplied together.

7. The ______________ law of multiplication makes possible different, but equally correct, ways of grouping the factors in a multiplication.

8. To move from one place to another is to ______________.

DOWN

1. The _______________ is the number being multiplied.

3. In the _______________ law of multiplication, the order of factors does not affect the product.

5. The answer to the multiplication problem is the _______________.

6. An _______________ is a number of numerals arranged in rows or columns.

UNIT IV

MULTIPLYING WHOLE NUMBERS

INFORMATION SHEET 2--MULTIPLICATION

I. Multiplying is a way of adding numbers more quickly.

   A. If you want to add 5 + 5 + 5 + 5 + 5 + 5 it would be quicker to say 6 x 5 = 30 or

$$\begin{array}{r} 5 \\ \times\ 6 \\ \hline \end{array}$$

   B. The symbol used to tell you to multiply is (x). It is often called the "times" sign.

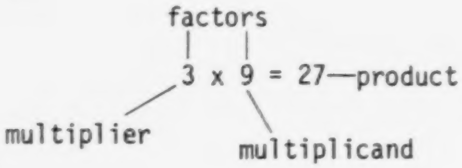
II. Names of Numbers in Multiplication

   A. The numbers you use when doing multiplication have names.

   B. The numbers are called "factors."

   C. Depending on what they do, they also have other names.

   EXAMPLE:



$$\begin{array}{rl} 9 & \text{multiplicand} \\ \times\ 3 & \text{multiplier} \\ \hline 27 & \text{product} \end{array}$$

III. Carrying numbers

   A. When you are multiplying, you may need to "carry" numbers.

   B. When you "carry" a number, you move it from one place to another.

   EXAMPLE:

$$\begin{array}{r} {\scriptstyle 1} \\ 573 \\ \times\ 4 \\ \hline 2 \end{array}$$

$$\begin{array}{r} {\scriptstyle 2\,1} \\ 573 \\ \times\ 4 \\ \hline 92 \end{array}$$

$$\begin{array}{r} {\scriptstyle 2\,1} \\ 573 \\ \times\ 4 \\ \hline 2{,}292 \end{array}$$

To start, multiply 4 x 3 = 12. Write the 2 in the ones column; place the 1 above the 7 (this is carrying). Now multiply 4 x 7 = 28. You then add the 1 to 28, giving you 29. Place the 9 in the tens column and the 2 above the 5. Multiply 4 x 5 = 20. Now add the 2 to the 20, giving you 22 which you write in the thousands and hundreds column.

(NOTE: You have been given a multiplication table in the unit to study.)

CARRYING IN MULTIPLICATION

$$\begin{array}{r} 5\overset{1}{7}3 \\ \times\ 4 \\ \hline 2 \end{array}$$

To start you would multiply **4 x 3=12**
Write the **2** in the ones column, place the **1** above the **7** (this is carrying).

$$\begin{array}{r} \overset{2}{5}\overset{1}{7}3 \\ \times\ 4 \\ \hline 92 \end{array}$$

Now multiply **4 x 7=28**. You then add the **1** to **28** giving you **29**. Place the **9** in the tens column and the **2** above the **5**. Multiply **4 x 5=20**.

$$\begin{array}{r} \overset{2}{5}\overset{1}{7}3 \\ \times\ 4 \\ \hline 2{,}292 \end{array}$$

Now add the **2** to the **20** giving you **22** which you write in the thousands and hundreds column.

MULTIPLICATION TABLE

SECOND FACTOR

FIRST FACTOR

X	**0**	**1**	**②**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
③	0	3	6	9	12	15	18	21	24	27
4	0	4	8	12	16	20	24	28	32	36
5	0	5	10	15	20	25	30	35	40	45
6	0	6	12	18	24	30	36	42	48	54
7	0	7	14	21	28	35	42	49	56	63
8	0	8	16	24	32	40	48	56	64	72
9	0	9	18	27	36	45	54	63	72	81

To solve the problem, find the column with the first factor, then find the second factor you are using to multiply; follow each of these until they meet. This is the product.

EXAMPLE: 3 X 2 = 6

first factor ↗ ↖ second factor

UNIT IV

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 2--ONE-DIGIT MULTIPLICATION

Directions: Find the product and check by reversing the order of the factors.

EXAMPLE: 9 x 8 = 72 Check: 8 x 9 = 72

1. $\begin{array}{r} 2 \\ \underline{\times\ 3} \end{array}$
2. $\begin{array}{r} 8 \\ \underline{\times\ 2} \end{array}$
3. $\begin{array}{r} 9 \\ \underline{\times\ 3} \end{array}$
4. $\begin{array}{r} 7 \\ \underline{\times\ 4} \end{array}$
5. $\begin{array}{r} 9 \\ \underline{\times\ 5} \end{array}$
6. $\begin{array}{r} 8 \\ \underline{\times\ 6} \end{array}$
7. $\begin{array}{r} 6 \\ \underline{\times\ 7} \end{array}$
8. $\begin{array}{r} 7 \\ \underline{\times\ 9} \end{array}$
9. $\begin{array}{r} 3 \\ \underline{\times\ 8} \end{array}$
10. $\begin{array}{r} 7 \\ \underline{\times\ 8} \end{array}$
11. $\begin{array}{r} 8 \\ \underline{\times\ 8} \end{array}$
12. $\begin{array}{r} 9 \\ \underline{\times\ 8} \end{array}$

13. 2 x 9 = ______
14. 3 x 7 = ______
15. 8 x 7 = ______
16. 9 x 4 = ______
17. 7 x 2 = ______
18. 9 x 2 = ______
19. 9 x 9 = ______
20. 7 x 7 = ______

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 3--ONE-DIGIT MULTIPLICATION

Directions: Find the product and check by reversing the order of the factors.

EXAMPLE: 4 x 2 x 1 = 8 Check: 1 x 2 x 4 = 8

1. $\begin{array}{r} 7 \\ \times\ 0 \\ \hline \end{array}$

2. $\begin{array}{r} 9 \\ \times\ 1 \\ \hline \end{array}$

3. $\begin{array}{r} 6 \\ \times\ 1 \\ \hline \end{array}$

4. $\begin{array}{r} 8 \\ \times\ 0 \\ \hline \end{array}$

5. $\begin{array}{r} 1 \\ \times\ 6 \\ \hline \end{array}$

6. $\begin{array}{r} 0 \\ \times\ 4 \\ \hline \end{array}$

7. $\begin{array}{r} 3 \\ \times\ 1 \\ \hline \end{array}$

8. $\begin{array}{r} 0 \\ \times\ 2 \\ \hline \end{array}$

9. 1 x 9 x 0 = ________

10. 7 x 1 x 0 = ________

11. 8 x 7 x 1 = ________

12. 6 x 0 x 0 = ________

13. 9 x 1 x 1 = ________

14. 8 x 9 x 1 = ________

15. 0 x 0 x 1 = ________

16. 3 x 2 x 1 = ________

17. 6 x 7 x 1 = ________

18. 8 x 0 x 9 = ________

19. 1 x 1 x 1 = ________

20. 1 x 0 x 7 = ________

UNIT IV

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 4--TWO-DIGIT MULTIPLICATION

Directions: Find the product and check by reversing the order of the factors.

EXAMPLE: 3 x 11 = 33 Check: 11 x 3 = 33

1. $\begin{array}{r} 22 \\ \text{x}\ \ 4 \\ \hline \end{array}$
2. $\begin{array}{r} 24 \\ \text{x}\ \ 2 \\ \hline \end{array}$
3. $\begin{array}{r} 93 \\ \text{x}\ \ 3 \\ \hline \end{array}$
4. $\begin{array}{r} 64 \\ \text{x}\ \ 2 \\ \hline \end{array}$
5. $\begin{array}{r} 71 \\ \text{x}\ \ 7 \\ \hline \end{array}$
6. $\begin{array}{r} 83 \\ \text{x}\ \ 3 \\ \hline \end{array}$
7. $\begin{array}{r} 91 \\ \text{x}\ \ 6 \\ \hline \end{array}$
8. $\begin{array}{r} 54 \\ \text{x}\ \ 2 \\ \hline \end{array}$
9. $\begin{array}{r} 84 \\ \text{x}\ \ 2 \\ \hline \end{array}$
10. $\begin{array}{r} 92 \\ \text{x}\ \ 3 \\ \hline \end{array}$
11. $\begin{array}{r} 53 \\ \text{x}\ \ 3 \\ \hline \end{array}$
12. $\begin{array}{r} 72 \\ \text{x}\ \ 4 \\ \hline \end{array}$
13. $\begin{array}{r} 83 \\ \text{x}\ \ 2 \\ \hline \end{array}$
14. $\begin{array}{r} 31 \\ \text{x}\ \ 2 \\ \hline \end{array}$
15. $\begin{array}{r} 32 \\ \text{x}\ \ 4 \\ \hline \end{array}$
16. $\begin{array}{r} 91 \\ \text{x}\ \ 4 \\ \hline \end{array}$
17. $\begin{array}{r} 91 \\ \text{x}\ \ 5 \\ \hline \end{array}$
18. $\begin{array}{r} 80 \\ \text{x}\ \ 5 \\ \hline \end{array}$
19. $\begin{array}{r} 33 \\ \text{x}\ \ 2 \\ \hline \end{array}$
20. $\begin{array}{r} 74 \\ \text{x}\ \ 2 \\ \hline \end{array}$

ACTIVITY

UNIT IV

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 5--TWO-DIGIT MULTIPLICATION

Directions: Find the product and check by reversing the order of the factors.

EXAMPLE: 5 x 25 = 125 Check: 25 x 5 = 125

1. 17 x 4
2. 15 x 5
3. 16 x 6
4. 19 x 3
5. 18 x 3
6. 17 x 5
7. 19 x 2
8. 13 x 6
9. 15 x 8
10. 15 x 6
11. 76 x 7
12. 37 x 9
13. 63 x 8
14. 72 x 9
15. 47 x 7
16. 39 x 6
17. 59 x 3
18. 52 x 8
19. 79 x 4
20. 27 x 8

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 6--MATHO BINGO

GROUP ACTIVITY

Directions: Construct Matho Boards from pieces of cardboard. Write Matho across the top. Put products of multiplication combinations in each square. Play as in Bingo. The caller calls out a multiplication fact. The player covers the correct product with a counter. The winner, with 5 counters in a row, calls back the number fact as a check. (3 x 9 = 27)

M	A	T	H	O
27	32	24	48	20
63	35	28	36	18
56	42	FREE	81	16
72	40	25	45	35
96	28	14	12	21

ACTIVITY

UNIT IV

MULTIPLYING WHOLE NUMBERS

INFORMATION SHEET 3--MULTIPLYING WITH TWO OR MORE DIGITS

I. Multiplying with two or more digits in the multiplier

A. When the multiplier has two or more digits, you must multiply by every digit.

B. The multiplication is done separately.

C. The product of each of these is a partial answer.

D. If the multiplier has two digits, then you will have two partial answers.

E. If the multiplier has three digits, you will have three partial answers.

II. Steps to follow when multiplying by a multiplier that has two or more digits

A. Set up the problem correctly by lining up digit columns. The ones digit of the multiplier should be under the ones digit of the multiplicand.

B. Take the ones digit of the multiplier and multiply from right to left (as you did before).

C. Take the tens digit of the multiplier and multiply from right to left. You will place the right-hand digit of this partial answer directly under the digit with which you are multiplying. Repeat this for each digit in the multiplier.

D. Now add the partial answers to get the product.

EXAMPLE: Multiply 195 x 23
Your multiplier has two digits, so you will multiply the multiplicand two times: first by the ones digit, 3; and then by the tens digit, 2.

(1) Set up your problem.

```
 195
x 23
----
```

(2) Using the digit 3 as the multiplier, multiply from right to left, 3 x 5 = 15. Now write the five directly under the 3, the digit you are multiplying with. Carry the 1 to the next digit, the 9. Now multiply 3 x 9 = 27, plus the 1 you carried equals 28. Write the 8 and carry the 2 to the next digit, the 1. Now multiply 3 x 1 = 3, plus the 2 you carried, equals 5. Write the 5. Now you have a partial answer.

```
   1
 195
x 23
----
 583
```

```
                  21
                 195
                x 23
                ----
partial answer -  583
```

(3) Multiply with the next digit, the 2. Write the first digit of this partial answer directly the 2, the digit you are multiplying with:

```
  11
  21
  195
x  23
  585
 390
```

2 x 5 = 10; write the 0 directly under the 2, and carry the 1 to the next digit, the 9.

2 x 9 = 18, plus the 1 you carried, equals 19. Write the 9 and carry the 1 to the next digit, the 1.

2 x 1 = 2, plus the one you carried, equals 3. Write the 3. The 390 is the partial answer.

```
   11
   21
   195
 x  23
   585
  390
 4,485
```

(4) Now draw a line under the partial answers and add the two numbers to get the final answer, the product. Be sure that you keep the partial answers correctly aligned.

ANSWER: 195 x 23 = 4,485

III. Checking your work--in order to check your work, reverse the order of your factors.

```
EXAMPLE:  5    to check     3
        x 3    change to  x 5
         15                15
```

MULTIPLYING WITH TWO OR MORE DIGITS

Multiply **195 x 23**

Your multiplier has two digits, so you will multiply the multiplicand two times: first by the ones digit, **3** ; and then by the tens digit, **2** .

(1) Set up your problem.

$$\begin{array}{r} 195 \\ \times\ 23 \\ \hline \end{array}$$

(2) Using the digit as the multiplier, multiply from right to left, **3 x 5=15** Now write the five directly under the **3**, the digit you are multiplying with. Carry the **1** to the next digit, the **9**. Now multiply **3 x 9=27** , plus the **1** you carried, equals **28**. Write the **8** and carry the **2** to the next digit, the **1**. Now multiply **3 x 1=3** , plus the **2** you carried, equals **5** . Write the **5**. Now you have a partial answer.

$$\begin{array}{r} 195 \\ \times\ 23 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 195 \\ \times\ 23 \\ \hline 585 \end{array}$$

partial answer

(3) Multiply with the next digit, the **2**. Write the first digit of this partial answer directly under the **2**, the digit you are multiplying with:

$$\begin{array}{r} \scriptstyle 1\,1 \\ \scriptstyle 2\,1 \\ 195 \\ \times\ 23 \\ \hline 585 \\ 390 \end{array}$$

2 x 5=10; write the **0** directly under the **2**, and carry the **1** to the next digit, the **9**.

2 x 9=18; plus the **1** you carried, equals **19**. Write the **9** and carry the **1** to the next digit, the **1**.

2 x 1=2; plus the **1** you carried, equals **3**. Write the **3**. The **390** is the partial answer.

(4) Now draw a line under the partial answer and add the two numbers to get the final answer, the product. Be sure that you keep the partial answers correctly aligned.

$$\begin{array}{r} \scriptstyle 1\,1 \\ \scriptstyle 2\,1 \\ 195 \\ \times\ 23 \\ \hline 585 \\ 390 \\ \hline 4{,}485 \end{array}$$

ANSWER **195 x 23=4,485**

CHECKING YOUR WORK

$$\begin{array}{r} 5 \\ \times\,3 \\ \hline 15 \end{array} \quad \begin{array}{c} \text{TO CHECK} \\ \text{CHANGE TO} \end{array} \quad \begin{array}{r} 3 \\ \times\,5 \\ \hline 15 \end{array}$$

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 7--TWO-DIGIT MULTIPLIER

Directions: Find the product and check by reversing the order of the factors.

EXAMPLE: 15 x 12 = 180 Check: 12 x 15 = 180

1. 33 x 21
2. 31 x 17
3. 74 x 15
4. 43 x 50
5. 39 x 21
6. 82 x 80
7. 54 x 61
8. 65 x 22
9. 84 x 20
10. 67 x 71
11. 43 x 62
12. 37 x 75
13. 39 x 20
14. 27 x 43
15. 58 x 40
16. 37 x 77
17. 60 x 60
18. 18 x 41
19. 28 x 93
20. 13 x 27

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 8--MULTIPLYING NUMBERS

Directions: Find the product and check by reversing the order of the factors.

EXAMPLE: (2 x 3) x 1 = 6 Check: 1 x (3 x 2) = 6

1. (2 x 3) x 4 = __________
2. 3 x (7 x 6) = __________
3. 4 x 4 x 4 = __________
4. (2 x 8) x 9 = __________
5. 3 x 5 x 7 = __________
6. 7 x 1 x 2 = __________
7. 5 x 5 x 6 = __________
8. 7 x (9 x 8) = __________
9. 6 x 7 x 8 = __________
10. 9 x 9 x 2 = __________
11. 9 x 1 x 3 = __________
12. (7 x 7) x 7 = __________
13. 6 x (8 x 3) = __________
14. 5 x 7 x 6 = __________
15. 9 x (5 x 6) = __________
16. 1 x (9 x 8) = __________
17. 8 x 8 x 8 = __________
18. 3 x 4 x 5 = __________
19. (7 x 5) x 9 = __________
20. (5 x 9) x 8 = __________

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 9--MULTIPLYING LARGE NUMBERS

Directions: Find the product and check by reversing the order of the factors.

EXAMPLE: 11 x 315 = 3,465 Check: 315 x 11 = 3,465

1. 458
x 37

2. 575
x 82

3. 976
x 37

4. 494
x 16

5. 808
x 54

6. 395
x 89

7. 762
x 40

8. 596
x 96

9. 245
x 318

10. 8521
x 179

11. 7864
x 926

12. 19,536
x 55

13. 29,731
x 56

14. 30,741
x 82

15. 1839
x 294

16. 607
x 142

17. 255 x 29,406 = __________

18. 888 x 80,800 = __________

19. 444 x 44,000 = __________

20. 2,003 x 27,007 = __________

ACTIVITY

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 10--MULTIPLYING WITH LARGER MULTIPLIERS

Directions: Find the product and check by reversing the order of the factors.

EXAMPLE: 100 x 568 = 56,800 Check: 568 x 100 = 56,800

1. $\begin{array}{r} 787 \\ \times\ 10 \\ \hline \end{array}$

2. $\begin{array}{r} 787 \\ \times\ 100 \\ \hline \end{array}$

3. $\begin{array}{r} 17 \\ \times\ 1{,}000 \\ \hline \end{array}$

4. $\begin{array}{r} 100 \\ \times\ 87 \\ \hline \end{array}$

5. $\begin{array}{r} 67 \\ \times\ 100 \\ \hline \end{array}$

6. $\begin{array}{r} 792 \\ \times\ 10 \\ \hline \end{array}$

7. $\begin{array}{r} 1{,}000 \\ \times\ 89 \\ \hline \end{array}$

8. $\begin{array}{r} 67{,}280 \\ \times\ 10 \\ \hline \end{array}$

9. $\begin{array}{r} 793 \\ \times\ 10 \\ \hline \end{array}$

10. $\begin{array}{r} 79{,}909 \\ \times\ 1{,}000 \\ \hline \end{array}$

11. $\begin{array}{r} 7{,}632 \\ \times\ 100 \\ \hline \end{array}$

12. $\begin{array}{r} 100 \\ \times\ 324 \\ \hline \end{array}$

13. $\begin{array}{r} 71{,}005 \\ \times\ 1{,}000 \\ \hline \end{array}$

14. $\begin{array}{r} 6{,}325 \\ \times\ 1{,}000 \\ \hline \end{array}$

15. $\begin{array}{r} 1{,}000 \\ \times\ 32{,}384 \\ \hline \end{array}$

16. $\begin{array}{r} 10 \\ \times\ 593 \\ \hline \end{array}$

17. $\begin{array}{r} 1{,}000 \\ \times\ 32{,}050 \\ \hline \end{array}$

18. $\begin{array}{r} 10 \\ \times\ 76{,}984 \\ \hline \end{array}$

19. $\begin{array}{r} 70{,}000 \\ \times\ 100 \\ \hline \end{array}$

20. $\begin{array}{r} 500 \\ \times\ 1{,}000 \\ \hline \end{array}$

UNIT IV

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 11--WORD PROBLEMS

Directions: Read each problem carefully, then work the problem.

1. What is the total length of 25 pieces of door casing if each piece is 8 feet long? __________

2. A worker places 63 linear feet of joists per hour. How many feet can the worker place in 8 hours? __________

3. Find the cost of 28 squares of asphalt shingles at $8.00 per square. (A square is 100 square feet.) __________

4. The cost of a new garage is $2,755. Find the total cost of building 13 garages of this kind. __________

5. Cathy bought 5 spools of wire. Each spool contained 125 yards of wire. How many yards of wire did Cathy have? __________

6. If there are 250 cedar shingles in one bundle, how many are there in 258 bundles? __________

7. A breakfast set requires 43 board feet of lumber. How many board feet will be needed for 53 sets that are to be made for a tearoom? __________

8. Galvanized nails used for nailing asphalt shingles cost $12 per box containing 50 pounds. How much do 12 boxes of these nails cost? __________

9. In making a table, 19 board feet of oak were used, including waste. How much stock will be used in completing an order for 54 such tables? __________

10. How many linear feet of furring are there in 9 bundles, each containing 10 pieces which are 12 feet long? __________

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 12--MULTIPLE MULTIPLICATION

Directions: Solve the following problems and check your work.

1. (6 + 7) x 1 = __________
2. (3 + 3) x 9 = __________
3. 7 X (3 + 2) = __________
4. (9 + 8) x 0 = __________
5. 0 x (0 + 0) = __________
6. 1 x (8 + 0) = __________
7. (3 + 3 + 2) x 7 = __________
8. (1 + 7) x (6 + 3) = __________
9. (7 x 9) + 5 = __________
10. (5 x 6) + (5 x 0) = __________
11. (7 + 6) x (8 + 9) = __________
12. 1 + (0 x 9) = __________
13. (7 x 7) + (2 x 2) = __________
14. 7 + 6 + (3 x 2) = __________
15. (3 + 2) x 0 = __________
16. (9 + 8) x (5 + 6) = __________
17. (6 + 4) x (4 + 6) = __________
18. (5 + 7) x 100 = __________
19. An electrical contractor uses 150 conduit fittings of one type for 30¢ per fitting and 65 of another type for 50¢ per fitting. Find the total cost. __________
20. Jean has 26 pieces of carpet. Each piece of carpet was 22 inches long. What is the total length of the carpet Jean had? __________

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 13--MULTIPLE MULTIPLICATION

Directions: Solve the following problems and check your work.

1. (6 - 3) x 4 = ________
2. (9 - 1) x 0 = ________
3. (10 - 0) x 10 = ________
4. (7 x 6) - 12 = ________
5. (8 x 9) - 3 = ________
6. 100 - (3 x 10) = ________
7. 17 - (8 x 2) = ________
8. (9 x 3) - (9 x 2) = ________
9. (7 x 8) - 20 = ________
10. (4 x 5) - 10 = ________
11. (3 x 0) - 0 = ________
12. 176 - (10 x 0) = ________
13. (16 x 9) - 100 = ________
14. (100 x 100) - 1000 = ________
15. (28 x 9) - (19 x 8) = ________
16. 7096 - (63 x 8) = ________
17. (10 x 10) - 50 = ________
18. 1000 - (73 x 10) = ________
19. (3 x 7) - 16 = ________
20. 79 - (6 x 7) - 16 = ________

ACTIVITY

MULTIPLYING WHOLE NUMBERS

ACTIVITY SHEET 14--ARITHMETIC RIDDLES

Directions: Find the correct letter to complete the words needed by solving the problems then using the key.

KEY

A=1
B=2
C=3
D=4
E=5
F=6
G=7
H=8
I=9
J=10
K=11
L=12
M=13
N=14
O=15
P=16
Q=17
R=18
S=19
T=20
U=21
V=22
W=23
X=24
Y=25
Z=26

What goes all the way from one town to another, but doesn't go an inch? ____________ (first word) ____________ (second word)

FIRST WORD

(6 x 4) - 4 = ☐ ____
☐ x 9 = 72 ____
(7 x 6) -37 = ☐ ____

SECOND WORD

☐ + 18 = 6 x 6 ____
☐ - 5 = 2 x 5 ____
☐ x 12 = 12 ____
☐ x 9 = 36 ____

Why do birds fly south in the winter?

____________ (first word) ____________ (second word) ____________ (third word) ____________ (fourth word)

FIRST WORD

☐ x 9 = 18 ____
☐ + 15 = 4 x 5 ____
☐ x 9 = 27 ____
☐ + 15 = 4 x 4 ____
(8 x 3) - 3 = ____
(6 x 4) - 5 = ____
6 x = 30 ____

SECOND WORD

(7 x 7) - 29 = ☐ ____
☐ x 6 = 48 ____
9 - ☐ = 2 x 2 ____
(5 x 6) - 5 = ☐ ____

THIRD WORD

3 x ☐ = 9 ____
7 x ☐ = 7 ____
☐ - 5 = 3 x 3 ____
7 x 2 = ☐ ____
☐ x 2 = 30 ____
6 x ☐ = 120

FOURTH WORD

(8 x 3) - 1 = ☐
☐ + 15 = 4 x 4 ____
☐ x 12 = 144 ____
☐ x 3 = 33 ____
____

ACTIVITY

Where were potatoes first found?

______ ______ ______

(first word) (second word) (third word)

FIRST WORD

☐ x 6 = 54 ______
☐ - 2 = 3 x 4 ______

SECOND WORD

☐ - 4 = 4 x 4 ______
☐ x 7 = 56 ______
☐ x 9 = 45 ______

THIRD WORD

☐ x 7 = 49 ______
6 x 3 = ☐ ______
☐ + 10 = 5 x 5 ______
7 x 3 = ☐ ______
☐ + 14 = 4 x 7 ______
☐ x 8 = 32 ______

How many big lumberjacks have been born in Alaska?

______ ______ ______

(first word) (second word) (third word)

FIRST WORD

☐ + 14 = 4 x 7 ______
3 x 5 = ☐ ______
14 - ☐ = 0 x 14 ______
9 x ☐ = 45 ______

SECOND WORD

☐ x 4 = 60 ______
(7 x 3) - 7 = ☐ ______
2 x ☐ = 24 ______
(6 x 4) + 1 = ☐ ______

THIRD WORD

☐ x 8 = 16 ______
☐ x 9 = 9 ______
9 x ☐ = 18 ______
☐ x 8 = 72 ______
10 x ☐ = 50 ______
4 x 5 - 1 = ☐ ______

UNIT IV

MULTIPLYING WHOLE NUMBERS

UNIT TEST--PART 1

A. Match the terms with their definitions by placing the correct letter in the blank.

_____ 1. Array

_____ 2. Associative law of multiplication

_____ 3. Carry

_____ 4. Commutative

_____ 5. Distributive

_____ 6. Factor

_____ 7. Multiplicand

_____ 8. Multiplier

_____ 9. Partial

_____ 10. Product

a. moving from one place to another

b. any number multiplied together

c. the number you are multiplying by

d. the answer to the multiplication problem

e. a number of numerals arranged in rows or columns

f. the order of factors does not affect the product

g. makes possible different ways of doing multiplication

h. the number being multiplied

i. a part of the total answer

j. makes possible different, but equally correct, ways of grouping the factors in multiplication

TEST

UNIT IV

MULTIPLYING WHOLE NUMBERS

UNIT TEST--PART 2

Find the product and check by reversing the order of the factors.

EXAMPLE: 7 x 5 = 35 Check: 5 x 7 = 35

1. 8 x 2
2. 7 x 4
3. 8 x 6
4. 7 x 8
5. 9 x 8

6. 1 x 9 x 0 = __________

7. 6 x 7 x 1 = __________

8. 8 x 9 x 1 = __________

9. 7 x 1 x 0 = __________

10. 3 x 2 x 1 = __________

11. 22 x 4
12. 83 x 3
13. 92 x 3

14. 72 x 4
15. 33 x 2
16. 17 x 5

17. 13 x 6
18. 63 x 8
19. 47 x 7
20. 79 x 4

TEST

UNIT IV

MULTIPLYING WHOLE NUMBERS

UNIT TEST--PART 3

Find the product and check by reversing the order of the factors.

EXAMPLE: 11 x 17 = 187 Check: 17 x 11 = 187

1. 31
x 17

2. 74
x 15

3. 43
x 62

4. 28
x 93

5. 6 x 7 x 8 = __________

6. (7 x 5) x 9 = __________

7. 9 x 9 x 2 = __________

8. 3 x 4 x 5 = __________

9. 458
x 37

10. 395
x 89

11. 1839
x 294

12. 607
x 142

13. 787
x 100

14. 79,909
x 1,000

15. 71,005
x 1,000

16. 1,000
x 89

17. A worker places 63 linear feet of joists per hour. How many feet can the worker place in 8 hours? __________

18. How many linear feet of furring are there in 9 bundles, each containing 10 pieces which are 12 feet long? __________

19. (7 + 6) x (8 + 9) = __________

20. (5 x 6) + (3 x 3) = __________

UNIT V

DIVIDING WHOLE NUMBERS

UNIT OBJECTIVE

After completion of this unit, the student will be able to divide whole numbers. This knowledge will be evidenced through demonstration and by successfully completing the unit test.

SPECIFIC OBJECTIVES

In completing this unit of instruction, the student will:

1. Divide two-digit numbers when there is no remainder in the answer and check the answer
2. Given an explanation of the special case of division into and by 0, divide (or state the impossibility of division) a problem involving 0 and check the answer
3. Divide a one-digit number by a one-digit number when there is a remainder in the answer and check the answer
4. Divide a two-digit dividend by a one-digit number when there is no remainder in the answer and check the answer
5. Divide a two-digit dividend by a one-digit divisor when there is a remainder in the answer and check the answer
6. Divide a four, five, or six-digit dividend by a two-digit divisor when there is at least one zero in the quotient and check the answer
7. Divide two two-digit numbers having quotients with and without remainders and check the answers
8. Divide three, four, five, and six-digit dividends by two or three-digit divisors when the quotient may or may not have remainders and check the answers
9. Solve short word problems involving the division of whole numbers
10. Solve addition-division combination problems and check the answers
11. Solve subtraction-division combination problems and check the answers
12. Solve multiplication-division problems and check the answers

UNIT V

DIVIDING WHOLE NUMBERS

NOTES TO THE INSTRUCTOR

I. Objective Sheet

  A. Discuss the unit objective with the students.

  B. Discuss each specific objective with the students.

  C. Have the students complete the objectives in a sequence best suited to your classroom.

  D. Add any objectives necessary to meet fully the needs of the unit and the student.

II. Pre/Post Test

  A. The Pre/Post Test may be used to determine students' knowledge of information prior to beginning the unit.

  B. The Pre/Post Test is divided into parts to correspond with each Information Sheet.

    1. The student may not need to cover each Information Sheet.

    2. The teacher may use the test to determine the area of information with which the student may need help.

  C. The Pre/Post Test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

  A. INFORMATION SHEET 1--TERMS AND DEFINITIONS

    1. Stress to the students the importance of understanding the terms used in solving division problems.

    2. Use the following Activity Sheets to meet fully the objectives of this unit.

      a. ACTIVITY SHEET 1--MATCHING TERMS

      b. ACTIVITY SHEET 2--NAMES IN DIVISION

  B. INFORMATION SHEET 2--DIVISION

    1. Explain that when working a division problem, you find out how many times a smaller number (the divisor) will go into a larger number (the dividend).

2. Explain that the answer to a division problem is called the "quotient."

3. Show TM-1--DIVIDING NUMBERS to reinforce this area of information.

4. Explain what the symbol (÷) means.

5. Explain what the ($\overline{)}$) is.

6. Show TM-2--DIVISION SYMBOLS to reinforce this area of information.

7. Use ACTIVITY SHEET 3--SETTING UP DIVISION PROBLEMS to reinforce this area of information.

C. INFORMATION SHEET 3--SOLVING A DIVISION PROBLEM

1. Explain that there are steps to follow in solving a division problem.

   a. Divide $4\ \overline{)124}$

      This problem asks how many times will four go into 124. In order to work this problem, you must break down the dividend, 124, into a smaller number. To do this, you work a series of separate division problems. It will help you to draw a vertical line according to the following rule:

      RULE: In the dividend, moving from the left to the right, move as many digits as you need to make a "new dividend" that is as large as or larger than the divisor. Then draw a vertical line.

   b. Explain that in our example, you would draw a line after the 2 because 12 is as large as, or larger than, the divisor, 4. The problem now looks like this:

      $$\begin{array}{rr|l} 4 & \overline{)12} & \overline{4} \end{array}$$

      You can think of the digits to the left of the line as being the "new dividend." Now you can ask, "How many 4's will go into 12?" The answer is 3, so you place the 3 directly above the right hand digit of the dividend, the 2.

      $$\begin{array}{rr|l} & 3 & \\ 4 & \overline{)12} & \overline{4} \end{array}$$

   c. Explain that the next step is to multiply this answer, 3, by the divisor, 4. The product is 12, and you place this under the dividend, 12.

      $$\begin{array}{rr|l} & 3 & \\ 4 & \overline{)12} & \overline{4} \\ & \underline{12} & \end{array}$$

d. Explain that you now subtract the bottom number from the top number; you get 0 (you do not need to write this 0). The next step is to bring down the next digit of the dividend, the 4, in a straight line. We call the 4 the "new dividend" because you will now divide the 4 into the 4.

$$\begin{array}{rl} 3 & \\ 4\;\overline{)124} & \\ \underline{12\downarrow} & \\ 4 & - \text{ new dividend} \end{array}$$

e. Discuss that you now have a new problem: "How many times will 4 go into 4?" The answer is 1; write the 1 above the 4 which is in the division box.

$$\begin{array}{r} 31 \\ 4\;\overline{)124} \\ \underline{12} \\ 4 \end{array}$$

f. Explain that you now multiply the answer, 1, by the divisor which is 4. The product is 4; place this 4 under the "new dividend," 4, and subtract. The result is 0.

ANSWER: $4\;\overline{)124} = 31$

2. Explain that when the divisor contains two or more digits, you follow the same steps as when the divisor has one digit.

3. Explain the process of checking your work by multiplying the answer of the problem (the quotient) by the divisor.

4. Show TM-3--CHECKING YOUR WORK to reinforce this area of information.

5. Use the following Activity Sheets to meet fully the objectives of this unit.

   a. ACTIVITY SHEET 4--ONE-DIGIT DIVISION

   b. ACTIVITY SHEET 5--ONE-DIGIT DIVISION

   c. ACTIVITY SHEET 6--ONE-DIGIT DIVISION

   d. ACTIVITY SHEET 7--TWO-DIGIT DIVISION

   e. ACTIVITY SHEET 8--TWO-DIGIT DIVISION

   f. ACTIVITY SHEET 9--DIVIDING LARGE NUMBERS

   g. ACTIVITY SHEET 10--DIVIDING NUMBERS

   h. ACTIVITY SHEET 11--DIVISION OF NUMBERS

   i. ACTIVITY SHEET 12--WORD PROBLEMS

   j. ACTIVITY SHEET 13--DIVIDING AND ADDING

   k. ACTIVITY SHEET 14--DIVISION AND SUBTRACTION

   l. ACTIVITY SHEET 15--DIVISION AND MULTIPLICATION

   m. ACTIVITY SHEET 16--QUICK REVIEW WHOLE NUMBERS

IV. Answers to Pre/Post Test

   A. Answers are based on total information covered in this unit.

   B. Right and wrong answers may assist the teacher in discovering individual student weaknesses.

V. Answers to Activity Sheets

   A. Some of the Activity Sheets will vary according to training and should be graded individually.

   B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

   A. The Unit Test is divided into three parts.

      1. Each part covers one Information Sheet.

      2. Each part uses various methods of testing.

   B. Various approaches may be used in testing.

      1. Give each part of the test after the student has completed the information in one information area or sheet.

      2. Give the entire test upon completion of all the Information and Activity Sheets.

      3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

   C. Add test parts corresponding to any information areas or sheets added to the unit.

VII. Answers to Unit Tests

   A. Answers are based on total information covered in the unit.

   B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

   A. Bitter, Gary G. et al. McGraw-Hill Mathematics K-8. New York: Webster Division, McGraw-Hill Book Company, 1981.

   B. Deans, Edwina et al. Exploring Mathematics. New York: American Book Company, 1963.

C. Goozner, Calman. Arithmetic Skills Workbook. New York: AMSCO School Publications, Inc., 1973.

UNIT V

DIVIDING WHOLE NUMBERS

ANSWERS TO PRE/POST TEST

A. 1. Division
   a. Quotient
   b. Divisor
   c. Dividend
   d. Remainder

B. 1. 6 ÷ 2 $2\overline{)6}$
   2. 21 ÷ 7 $7\overline{)21}$
   3. 12 ÷ 6 $6\overline{)12}$
   4. 30 ÷ 5 $5\overline{)30}$
   5. 8 ÷ 2 $2\overline{)8}$

C. 1. 3
   2. 1, r = 2
   3. 13
   4. 12
   5. 28, r = 2

ANSWERS TO TEST

UNIT V

DIVIDING WHOLE NUMBERS

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1

1. b
2. c
3. e
4. a
5. d

ACTIVITY SHEET2

1. Division
2. a. Quotient
   b. Divisor
   c. Dividend
   d. Remainder

ACTIVITY SHEET 3

1. 4 ÷ 2 $2\overline{)4}$
2. 24 ÷ 8 $8\overline{)24}$
3. 12 ÷ 6 $6\overline{)12}$
4. 10 ÷ 5 $5\overline{)10}$
5. 50 ÷ 25 $25\overline{)50}$
6. 16 ÷ 4 $4\overline{)16}$
7. 21 ÷ 9 $9\overline{)21}$
8. 36 ÷ 9 $9\overline{)36}$
9. 15 ÷ 5 $5\overline{)15}$
10. 100 ÷ 25 $25\overline{)100}$

ACTIVITY SHEET 4

1. 2
2. 3
3. 4
4. 1
5. 2
6. 1
7. 1
8. 2
9. 7

ACTIVITY SHEET 5

1. 0
2. impossible
3. impossible
4. impossible
5. 0
6. 0
7. 0
8. 0

ACTIVITY SHEET 6

1. 2, r = 1
2. 3, r = 1
3. 1, r = 1
4. 1, r = 2
5. 1, r = 3
6. 4, r = 1
7. 1, r = 3
8. 1, r = 3
9. 1, r = 4

ACTIVITY SHEET 7

1. 13
2. 13
3. 18
4. 11
5. 15
6. 12
7. 12
8. 14
9. 18
10. 28
11. 13

ACTIVITY SHEET 8

1. 7, r = 7
2. 32, r = 2
3. 16, r = 1
4. 6, r = 5
5. 14, r = 1
6. 14, r = 1
7. 12, r = 6
8. 17, r = 3
9. 18, r = 1
10. 13, r = 2
11. 3, r = 3
12. 24, r = 2
13. 14, r = 3
14. 9, r = 3
15. 14, r = 4
16. 9, r = 3
17. 23, r = 1
18. 14, r = 2
19. 28, r = 2

ACTIVITY SHEET 9

1. 509
2. 203
3. 2,103
4. 3,002
5. 406
6. 608
7. 250
8. 102
9. 301
10. 3,102
11. 204
12. 106
13. 1,026
14. 207
15. 309
16. 1,040
17. 505
18. 403
19. 109

ACTIVITY SHEET 10

1. 5
2. 4
3. 8
4. 2, r = 3
5. 6, r = 3
6. 4, r = 6
7. 2, r = 3
8. 2, r = 18
9. 4, r = 9
10. 4, r = 15
11. 1, r = 36
12. 3, r = 7
13. 6, r = 5
14. 1, r = 11
15. 2, r = 1
16. 3
17. 9
18. 3
19. 5

ACTIVITY SHEET 11

1. 22, r = 25
2. 36, r = 14
3. 44, r = 3
4. 44, r = 6
5. 42, r = 7
6. 4, r = 16
7. 20, r = 7
8. 10, r = 84
9. 200, r = 8
10. 88, r = 5
11. 2, r = 10
12. 59, r = 23
13. 32, r = 116
14. 17, r = 6
15. 89, r = 100
16. 36, r = 10
17. 144
18. 4, r = 6
19. 105, r = 6

ACTIVITY SHEET 12

1. 6
2. 9
3. 21
4. 12
5. 24
6. 18
7. 30
8. 22
9. 1,320
10. 7

ACTIVITY SHEET 13

1. 8
2. 20
3. 6
4. 15
5. 1
6. impossible
7. 10
8. 102
9. 8
10. 13

ACTIVITY SHEET 14

1. 0
2. 99
3. 1
4. 12
5. 6
6. 4
7. 2
8. 0
9. 0
10. 0

ACTIVITY SHEET 15

1. 8
2. 5
3. 2
4. 34
5. 34
6. 10
7. 8,761
8. 28
9. 12
10. 153

ACTIVITY SHEET 16

Across

1. 7
2. 3
3. 16
5. 224
7. 1
8. 0
9. 53
11. 2396
14. 7616
16. 27
17. 9
18. 8
19. 385
21. 53
22. 8
23. 8

Down

1. 714
2. 32
4. 6
6. 20
7. 132
9. 56
10. 318
11. 2
12. 97
13. 6
14. 7
15. 6
17. 98
19. 338
20. 58
21. 5

UNIT V

DIVIDING WHOLE NUMBERS

ANSWERS TO UNIT TEST

PART 1

A.
1. d
2. a
3. b
4. e
5. c

B.
1. Quotient
2. Divisor
3. Dividend
4. Remainder

PART 2

1.	100 ÷ 25	$25\overline{)100}$	6.	50 ÷ 25	$25\overline{)50}$
2.	15 ÷ 5	$5\overline{)15}$	7.	10 ÷ 5	$5\overline{)10}$
3.	36 ÷ 9	$9\overline{)36}$	8.	12 ÷ 6	$6\overline{)12}$
4.	21 ÷ 9	$9\overline{)21}$	9.	24 ÷ 8	$8\overline{)24}$
5.	16 ÷ 4	$4\overline{)16}$	10.	4 ÷ 2	$2\overline{)4}$

PART 3

1. 3
2. 4
3. 7
4. 0
5. 1, r = 2
6. 3, r = 1
7. 1, r = 3
8. 1, r = 4
9. 13
10. 12
11. 28
12. 12, r = 6
13. 9, r = 3
14. 28, r = 2
15. 3,002
16. 301
17. 505
18. 403
19. 309
20. 5
21. 4, r = 16
22. 86, r = 100
23. 105, r = 6
24. 20, r = 7

UNIT V

DIVIDING WHOLE NUMBERS

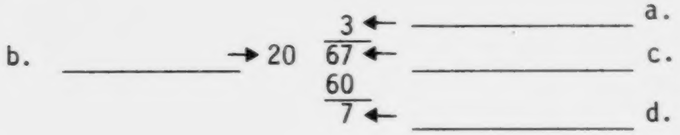
PRE/POST TEST

A. Directions: Using the words below, fill in the blanks.

Dividend	Divisor	Quotient
Division	Remainder	

1. The problem under #2 is a ______________ problem.

2. Identify the parts of the division problem by writing the correct word in the blank.



B. Directions: Set up the following word problems using the "divided by" symbol (÷) and the "division box" ($\overline{)\quad}$).

1. Divide six by two

4. Divide thirty by five.

2. Divide twenty-one by seven.

5. Divide eight by two.

3. Divide twelve by six.

C. Work the following division problems and write the answers in the blanks.

1. 6 ÷ 2 = _____

2. 6 ÷ 4 = _____

3. $5\overline{)65}$

4. $8\overline{)96}$ _____

5. $3\overline{)86}$ _____ r = _____

UNIT V

DIVIDING WHOLE NUMBERS

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. Dividend--the number being divided
2. Division--any number being broken down into smaller groups of numbers
3. Divisor--the number doing the dividing
4. Remainder--the number left when a division problem does not come out even
5. Quotient--the answer you get when you divide a number

UNIT V

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 1--MATCHING TERMS

Directions: Match the terms with their correct definition.

_____ 1. Dividend

_____ 2. Division

_____ 3. Divisor

_____ 4. Remainder

_____ 5. Quotient

a. the number left when a division problem does not come out even

b. the number being divided

c. any number being broken down into smaller groups of numbers

d. the answer you get when you divide a number

e. the number doing the dividing

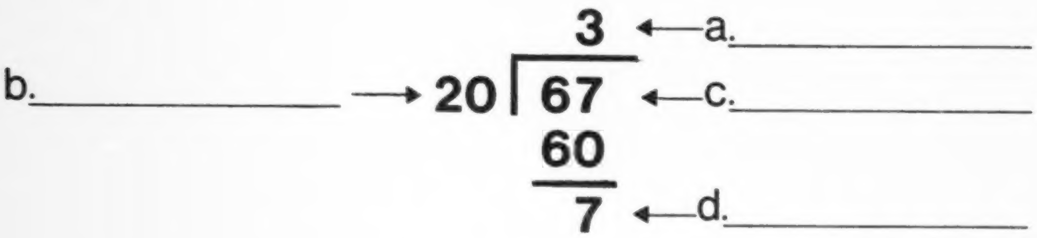
ACTIVITY

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 2--NAMES IN DIVISION

Directions: Using the words listed below, fill in the blanks.

Dividend	Divisor	Quotient
Division	Remainder	



1. This is a ____________________ problem.
2. Identify the parts of the division problem by writing the correct term in the blanks.

ACTIVITY

DIVIDING WHOLE NUMBERS

INFORMATION SHEET 2--DIVISION

I. Dividing Whole Numbers

A. Working a division problem is the opposite of working a multiplication problem.

B. When you do a division problem, you find out how many times a smaller number (the divisor) will go into a larger number (the dividend).

C. The answer to a division problem is called the quotient.

II. Symbols Used in Division Problems

A. The symbol used to indicate division is (÷) which means "divided by."

B. When we use this symbol, the problem looks like this:

$$20 \div 4$$

C. The most common way to show division, however, is the use of the "division box."

divisor → $4\overline{)20}$ ← dividend

division box

DIVIDING NUMBERS

★★★★ Divided By ★★ = ★★

●●●●●●●●●● Divided By **2** = ●●●●●

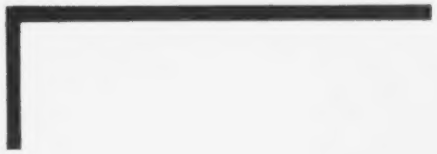
$$4 \div 2 = 2$$

$$10 \div 2 = 5$$

DIVISION SYMBOLS

÷

"Divided by"



"Division Box"

UNIT V

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 3--SETTING UP DIVISION PROBLEMS

Directions: Read the statements below and set up the division problem using both the "divided by" symbol and the "division box."

Divided By ÷ Division Box ⟌

1. Divide four by two.

2. Divide twenty-four by eight.

3. Divide twelve by six.

4. Divide ten by five.

5. Divide fifty by twenty-five.

6. Divide sixteen by four.

7. Divide twenty-one by nine.

8. Divide thrity-six by nine.

9. Divide fifteen by five.

10. Divide one hundred by twenty-five.

DIVIDING WHOLE NUMBERS

INFORMATION SHEET 3--SOLVING A DIVISION PROBLEM

I. Using division involves a step-by-step process.

A. By using division, we can solve the following problem:

Divide $4\,\overline{)124}$

This problem asks how many times will four go into 124. In order to work this problem, you must break down the dividend, 124, into a smaller number. To do this, you work a series of separate division problems. It will help you to draw a vertical line according to the following rule:

RULE: In the dividend, moving from the left to the right, move as many digits as you need to make a "new dividend" that is as large as or larger than, the divisor. Then draw a vertical line.

Draw a line after the 2 because 12 is as large as, or larger than, the divisor, 4. The problem now looks like this:

$$4\,\overline{)12|4}$$

You can think of the digits to the left of the line as being the "new dividend." Now you can ask, "How many 4's will go into 12." The answer is 3, so you place the 3 directly above the right hand digit of the dividend, the 2.

$$\begin{array}{rl} & 3| \\ 4 & \overline{)12|4} \end{array}$$

Your next step is to multiply this answer, 3, by the divisor, 4. The product is 12, and you place this under the dividend, 12.

$$\begin{array}{rl} & 3| \\ 4 & \overline{)12|4} \\ & \underline{12}| \end{array}$$

Now subtract the bottom number from the top number; you get 0 (you do not need to write this 0). The next step is to bring down the next digit of the dividend, the 4, in a straight line. We call the 4 the "new dividend" because you will now divide the 4 into the 4.

$$\begin{array}{rl} & 3 \\ 4 & \overline{)124} \\ & \underline{12\downarrow} \\ & 4 \leftarrow \text{new dividend} \end{array}$$

You now have a new problem: "How many times will 4 go into 4?" The answer is 1; write the 1 above the 4 which is in the division box.

$$\begin{array}{r} 31 \\ 4\overline{)124} \\ \underline{12} \\ 4 \end{array}$$

Now multiply the answer, 1, by the divisor which is 4. The product is 4; place this 4 under the "new dividend," 4, and subtract. The result is 0.

ANSWER $4\overline{)124} = 31$

B. When the divisor contains two or more digits, follow the same steps as when the divisor has one digit.

II. Checking Your Work--you can check your work by multiplying the answer of the problem (the quotient) by the divisor. This product should equal the dividend:

$$\begin{array}{r} 31 \\ \underline{\times\ 4} \\ 124 \end{array}$$

REMEMBER: Quotient x divisor = dividend.

CHECKING YOUR WORK

$$\begin{array}{r} 31 \\ 4\overline{)124} \\ \underline{12} \\ 4 \end{array}$$

You can check your work by multiplying the answer of the problem (the quotient) by the divisor. This product should equal the dividend:

$$\begin{array}{r} 31 \\ \underline{\times 4} \\ 124 \end{array}$$

Remember: Quotient **x** Divisor = Dividend.

You can check your work by multiplying the answer of the problem (the quotient) by the divisor. This product should equal the dividend:

Remember: Quotient x Divisor = Dividend

TM-3

307

UNIT V

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 4--ONE-DIGIT DIVISION

Directions: Divide the following, find your answer, and check by multiplying the quotient and the divisor.

EXAMPLE:

9 ÷ 3 = ___3___

$$\begin{array}{r} 3 \\ 3\overline{)9} \end{array}$$

check: $$\begin{array}{r} 3 \\ \times\ 3 \\ \hline 9 \end{array}$$

1. 4 ÷ 2 = __________

2. 6 ÷ 2 = __________

3. 8 ÷ 2 = __________

4. 2 ÷ 2 = __________

5. 6 ÷ 3 = __________

6. 3 ÷ 3 = __________

7. 4 ÷ 4 = __________

8. 8 ÷ 4 = __________

9. 7 ÷ 1 = __________

ACTIVITY

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 5--ONE-DIGIT DIVISION

Directions: Divide and check your work by multiplying the quotient and divisor.

Example:	Example:
9 ÷ 0 = no answer	0 ÷ 9 = 0
because there is no number which can be multiplied by 0 and the result be equal to 9.	because 0 x 9 = 0

1. 0 ÷ 8 = ______________

2. 6 ÷ 0 = ______________

3. 8 ÷ 0 = ______________

4. 4 ÷ 0 = ______________

5. 0 ÷ 5 = ______________

6. (2 x 3) ÷ 0 = ______________

7. 0 ÷ 2 = ______________

8. 0 ÷ 7 = ______________

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 6--ONE-DIGIT DIVISION

Directions: Divide and check the answer by multiplying the quotient and divisor and adding the remainder.

EXAMPLE:

9 ÷ 4 = 2, r = 1

$$\begin{array}{r} 2 \\ 4\overline{)9} \\ \underline{8} \\ 1 \end{array} \qquad \text{Check:} \quad \begin{array}{r} 4 \\ \underline{\times\ 2} \\ 8 \\ \underline{+\ 1} \\ 9 \end{array}$$

1. 7 ÷ 3 = ____ r = ____

2. $2\overline{)7}$ = ____ r = ____

3. $4\overline{)5}$ = ____ r = ____

4. 6 ÷ 4 = ____ r = ____

5. $5\overline{)8}$ = ____ r = ____

6. 9 ÷ 2 = ____ r = ____

7. $6\overline{)9}$ = ____ r = ____

8. 7 ÷ 4 = ____ r = ____

9. $5\overline{)9}$ = ____ r = ____

UNIT V

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 7--TWO-DIGIT DIVISION

Directions: Divide and check the answer by multiplying the quotient and divisor.

EXAMPLE:

$$\begin{array}{r} 15 \\ 2\overline{)30} \\ \underline{2} \\ 10 \\ \underline{10} \end{array} \qquad \begin{array}{r} 15 \\ \underline{\times\ \ 2} \\ 30 \end{array}$$

1. $3\overline{)39}$

2. $5\overline{)65}$

3. $4\overline{)72}$

4. $2\overline{)22}$

5. $5\overline{)75}$

6. $7\overline{)84}$

7. $8\overline{)96}$

8. $6\overline{)84}$

9. $3\overline{)54}$

10. $2\overline{)56}$

11. $7\ \overline{91}$

UNIT V

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 8--TWO-DIGIT DIVISION

Directions: Divide and check the answer by multiplying the quotient and divisor and adding the remainder.

EXAMPLE:

$$\begin{array}{r} 12 \\ 7\overline{)89} \\ \underline{7} \\ 19 \\ \underline{14} \\ 5 \end{array} \qquad \text{Check:} \quad \begin{array}{r} 12 \\ \underline{\times\ \ 7} \\ 84 \\ \underline{+\ \ 5} \\ 89 \end{array}$$

1. $9\overline{)70}$ ______, r= ______

2. $98 \div 3 =$ ______, r= ______

3. $65 \div 4 =$ ______, r= ______

4. $8\overline{)53}$ ______, r= ______

5. $4\overline{)57}$ ______, r= ______

6. $6\overline{)85}$ ______, r= ______

7. $7\overline{)90}$ ______, r= ______

8. $88 \div 5 =$ ______, r= ______

9. $3\overline{)55}$ ______, r= ______

10. $6\overline{)80}$ ______, r= ______

11. $8\overline{)27}$ ______, r= ______

12. $3\overline{)74}$ ______, r= ______

13. $4\overline{)59}$ ______, r= ______

14. $6\overline{)57}$ ______, r= ______

15. $74 \div 5 =$ ______, r= ______

16. $9\overline{)84}$ ______, r= ______

17. $93 \div 4 =$ ______, r= ______

18. $72 \div 5 =$ ______, r= ______

19. $3\overline{)86}$ ______, r= ______

UNIT V

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 9--DIVIDING LARGER NUMBERS

Directions: Divide and check by multiplying the quotient and divisor.

EXAMPLE: 8,652 ÷ 28 = 309

$$\begin{array}{r} 309 \\ 28\overline{)8652} \\ \underline{84} \\ 252 \\ \underline{252} \end{array} \qquad \text{Check:} \quad \begin{array}{r} 309 \\ \times\ \ 28 \\ \hline 2472 \\ 618 \\ \hline 8652 \end{array}$$

1. 8,653 ÷ 17 = __________

2. 14,819 ÷ 73 = __________

3. 46,266 ÷ 22 = __________

4. 45,030 ÷ 15 = __________

5. 6,902 ÷ 17 = __________

6. 21,888 ÷ 36 = __________

7. 12,000 ÷ 48 = __________

8. 5,814 ÷ 57 = __________

9. 5,719 ÷ 19 = __________

10. 65,142 ÷ 21 = __________

11. 6,732 ÷ 33 = __________

12. 2,862 ÷ 27 = __________

13. 14,364 ÷ 14 = __________

14. 4,761 ÷ 23 = __________

15. 4,017 ÷ 13 = __________

16. 11,440 ÷ 11 = __________

17. 6,060 ÷ 12 = __________

18. 14,911 ÷ 37 = __________

19. 1,744 ÷ 16 = __________

UNIT V

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 10--DIVIDING NUMBERS

Directions: Divide and check the answer by multiplying the quotient and divisor and adding the remainder.

EXAMPLE:

$$\begin{array}{r} 7 \\ 14\overline{)98} \end{array} \qquad \text{Check: } \begin{array}{r} 14 \\ \underline{\times\ 7} \\ 98 \end{array}$$

1. $17\overline{)85}$ ____, r= ____

2. $22\overline{)88}$ ____, r= ____

3. $12\overline{)96}$ ____, r= ____

4. $47\overline{)97}$ ____, r= ____

5. $12\overline{)75}$ ____, r= ____

6. $23\overline{)98}$ ____, r= ____

7. $40\overline{)83}$ ____, r= ____

8. $24\overline{)66}$ ____, r= ____

9. $19\overline{)85}$ ____, r= ____

10. $17\overline{)83}$ ____, r= ____

11. 73 ÷ 37 = ____, r= ____

12. $30\overline{)97}$ ____, r= ____

13. $15\overline{)95}$ ____, r= ____

14. 63 ÷ 52 = ____, r= ____

15. $37\overline{)75}$ ____, r= ____

16. $26\overline{)78}$ ____, r= ____

17. $11\overline{)99}$ ____, r= ____

18. $31\overline{)93}$ ____, r= ____

19. 70 ÷ 14 = ____, r= ____

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 11--DIVISION OF NUMBERS

Directions: Divide and check by multiplying the quotient and divisor and adding the remainder.

EXAMPLE:

```
     30
 19 ⟌571     Check:   19
     57               x 30
     01                570
      0               +  1
      1                571
```

1. 597 ÷ 26 = ____, r= ____

2. 16 ⟌590 ____, r= ____

3. 20 ⟌883 ____, r= ____

4. 17 ⟌754 ____, r= ____

5. 15 ⟌637 ____, r= ____

6. 96 ⟌400 ____, r= ____

7. 70 ⟌1407 ____, r= ____

8. 92 ⟌1004 ____, r= ____

9. 3208 ÷ 16 = ____, r= ____

10. 13 ⟌1149 ____, r= ____

11. 75 ⟌160 ____, r= ____

ACTIVITY

12. $129\overline{)7634}$ ____, r= ____

13. $137\overline{)4500}$ ____, r= ____

14. $32\overline{)550}$ ____, r= ____

15. $200\overline{)17900}$ ____, r= ____

16. $64\overline{)2314}$ ____, r= ____

17. $72{,}000 \div 500$ ____, r= ____

18. $31\overline{)130}$ ____, r= ____

19. $18\overline{)1896}$ ____, r= ____

UNIT V

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 12--WORD PROBLEMS

Directions: Read and work the following problems. Place your answer in the blank.

1. How many rafters 36 inches long can be cut from a piece of lumber 216 inches long? ________
2. Determine the number of hours required to lay 765 square feet of subflooring at the rate of 85 square feet per hour. ________
3. How long does it take to install 3,192 square feet of bat-type insulation at the rate of 152 square feet per hour? ________
4. If a mechanic is paid $14.00 per day, how many days does the mechanic have to work to earn $168.00? ________
5. A car is driven 240 miles. If it averages ten miles per gallon, how many gallons of gasoline are used? ________
6. On a trip, a car uses 21 gallons while traveling 378 miles. How many miles per gallon does the car average? ________
7. If the valves on a 6-cylinder engine are reconditioned in 180 minutes, how much time does it take to recondition each valve? ________
8. A wiring job uses 1,232 feet of cable for 56 outlets. What is the average number of feet per outlet? ________
9. A total load of 15,840 watts is distributed equally over 12 circuits. What is the total load per circuit in watts? ________
10. An institution pack of frozen vegetables will serve about 40 people. How many packs would be used for 280 servings? ________

UNIT V

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 13--DIVIDING AND ADDING

Directions: Work the following problems using addition and division.

1. (20 + 60) ÷ 10 = __________

2. (100 ÷ 10) + 10 = __________

3. 78 ÷ (6 + 7) = __________

4. (96 ÷ 12) + 7 = __________

5. (100 ÷ 100) + 0 = __________

6. (16 ÷ 0) + 0 = __________

7. (0 ÷ 70) + 10 = __________

8. 100 + (6 ÷ 3) = __________

9. 72 ÷ (6 + 3) = __________

10. (100 ÷ 10) + (9 ÷ 3) = __________

ACTIVITY

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 14--DIVISION AND SUBTRACTION

Directions: Work the following problems using division and subtraction.

1. (6 ÷ 3) - 2 = ________

2. 100 - (7 ÷ 7) = ________

3. (93 ÷ 31) - (20 ÷ 10) = ________

4. (51 ÷ 3) - (10 ÷ 2) = ________

5. 10 - 2 - (6 ÷ 3) = ________

6. (10 - 2) ÷ (4 - 2) = ________

7. (60 ÷ 15) - (10 ÷ 5) = ________

8. 5,000 - (10,000 ÷ 2) = ________

9. (72 ÷ 8) - (9 ÷ 1) = ________

10. (0 ÷ 10) - (0 ÷ 5) = ________

UNIT V

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 15--DIVISION AND MULTIPLICATION

Directions: Work the following problems using division and multiplication.

1. (9 x 8) ÷ 9 = __________

2. 100 ÷ (20 x 1) = __________

3. (16 x 4) ÷ 32 = __________

4. (17 x 4) ÷ (2 x 1) = __________

5. (17 x 6) ÷ 3 = __________

6. (100 x 10) ÷ 100 = __________

7. 17,522 ÷ (2 x 1) = __________

8. (24 ÷ 6) x 7 = __________

9. (100 ÷ 25) x (51 ÷ 17) = __________

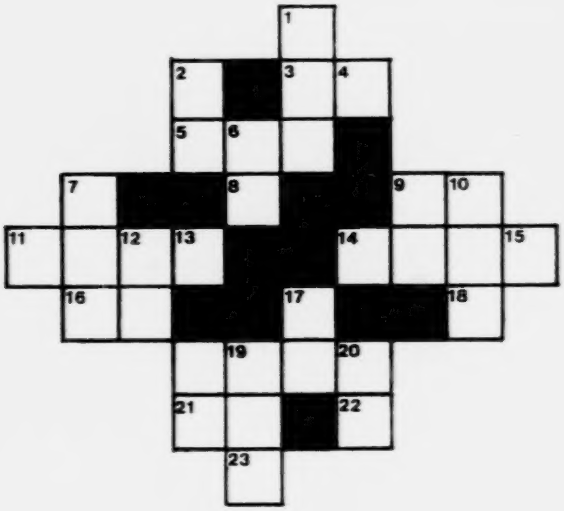
10. (85 ÷ 5) x (81 ÷ 9) = __________

ACTIVITY

DIVIDING WHOLE NUMBERS

ACTIVITY SHEET 16--QUICK REVIEW WHOLE NUMBERS

Directions: Work the problems and use the answers to complete the puzzle.



ACROSS

1. 15 - 8 =
2. 3 ÷ 1 =
3. 2 x 2 x 2 x 2 =
5. 13 + 15 + 39 + 57 + 63 + 37 =
7. 13 ÷ 13 =
8. 5 x 0 x 3 =
9. 318 ÷ 6 =
11. 599 x 4 =
14. 8,000 - 384
16. 3 x 3 x 3 =
17. 810 ÷ 90 =
18. 17 - 9 =
19. 65 + 37 + 63 + 10 + 23 + 95 + 42 + 50 =
21. 4 + 6 + 1 + 6 + 8 + 5 + 9 + 7 + 3 + 4 =
22. 44 - 36 =
23. 56 ÷ 7 =

DOWN

1. 1,000 - 286 =
2. 4 x 8 =
4. 6,594 ÷ 1,099 =
6. 2 x 2 x 5 =
7. 714 - 582 =
9. 2 + 3 + 5 + 6 + 7 + 8 + 9 + 11 + 5 =
10. 2 x 3 x 53 =
11. 70 ÷ 35 =
12. 388 ÷ 4 =
13. 1 + 2 + 3 =
14. 49 ÷ 7 =
15. 1 + 1 + 1 + 1 + 1 + 1 =
17. 2 x 7 x 7 =
19. 1,690 ÷ 5 =
20. 29 x 2 =
21. 193 - 188 =

UNIT V

DIVIDING WHOLE NUMBERS

UNIT TEST--PART 1

A. Match the terms with their definitions by writing the correct letter in the blank at the left.

_____ 1. the number left when a division problem does not come out even

_____ 2. the number being divided

_____ 3. any number being broken down into smaller groups of numbers

_____ 4. the answer you get when you divide a number

_____ 5. the number doing the dividing

a. Dividend

b. Division

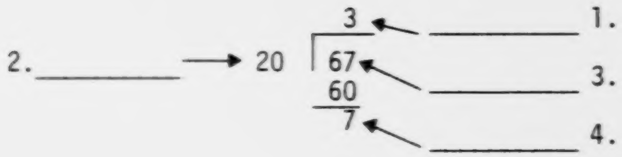
c. Divisor

d. Remainder

e. Quotient

B. Identify the parts of the division problem using the following words.

Divisor Quotient Remainder Dividend



UNIT V

DIVIDING WHOLE NUMBERS

UNIT TEST--PART 2

Read the word problems below and set up the division problem using both the "divided by" symbol (÷) and the "division box" ($\overline{\big)\quad}$).

1. Divide one hundred by twenty-five.
2. Divide fifteen by five.
3. Divide thirty-six by nine.
4. Divide twenty-one by nine.
5. Divide sixteen by four.
6. Divide fifty by twenty-five.
7. Divide ten by five.
8. Divide twelve by six.
9. Divide twenty-four by eight.
10. Divide four by two.

UNIT V

DIVIDING WHOLE NUMBERS

UNIT TEST--PART 3

Divide and check the answer by multiplying the quotient and divisor and adding the remainder.

EXAMPLE: $9 \div 3 = 3$ $\quad \begin{array}{r} 3 \\ 3\overline{)9} \end{array}$ $\quad$ Check: $\begin{array}{r} 3 \\ \underline{\times\ 3} \\ 9 \end{array}$

1. $6 \div 2 =$ ________

2. $8 \div 2 =$ ________

3. $7 \div 1 =$ ________

4. $(2 \times 3) \div 0 =$ ________

5. $6 \div 4 =$ ____, r= ____

6. $2\overline{)7}$ ____, r= ____

7. $6\overline{)9}$ ____, r= ____

8. $5\overline{)9}$ ____, r= ____

9. $5\overline{)65}$ ____, r= ____

10. $8\overline{)96}$ ____, r= ____

11. $2\overline{)56}$ ____, r= ____

12. $7\overline{)90}$ ____, r= ____

13. $9\overline{)84}$ ____, r= ____

14. $3\overline{)86}$ ____, r= ____

TEST

15. 45,030 ÷ 15 = ____, r=____

16. 5,719 ÷ 19 = ____, r=____

17. 6,060 ÷ 12 = ____, r=____

18. 14,911 ÷ 37 = ____, r=____

19. 4,017 ÷ 13 = ____, r=____

20. 70 ÷ 14 = ____, r=____

21. $96\overline{)400}$ ____, r=____

22. $200\overline{)17900}$ ____, r=____

23. $18\overline{)1896}$ ____, r=____

24. $70\overline{)1407}$ ____, r=____

UNIT VI

FRACTIONS

UNIT OBJECTIVE

After completion of this unit, the student will be able to use fractions in working math problems. This knowledge will be evidenced through demonstration and by satisfactorily completing the unit test.

SPECIFIC OBJECTIVES

In completing this unit of instruction, the student will:

1. Identify terms and definitions associated with fractions
2. Be able to explain the relationship of fractions to whole numbers
3. Identify the numerator and denominator in a given fraction
4. Identify a proper fraction
5. Identify an improper fraction
6. Change improper fractions to mixed numbers
7. Change mixed numbers to improper fractions
8. Reduce fractions to lowest terms
9. Add common fractions having like denominators
10. Add mixed numbers
11. Add fractions having unlike denominators
12. Add mixed numbers having unlike denominators
13. Subtract common fractions having like denominators
14. Subtract mixed numbers having fractions with like denominators
15. Subtract fractions having unlike denominators without having to "borrow"
16. Subtract mixed numbers when it is necessary to "borrow"
17. Multiply common fractions
18. Multiply a whole/mixed number and a fraction/mixed number
19. Write reciprocals for given fractions

20. Divide a whole number by a unit fraction
21. Divide a whole number by a common fraction
22. Divide a common fraction by a common fraction
23. Divide a mixed number by a common fraction
24. Divide a fraction or a mixed number by a whole number
25. Divide a mixed number or a whole number by a mixed number

UNIT VI

FRACTIONS

NOTES TO THE INSTRUCTOR

I. Objective Sheet

  A. Discuss the unit objective with the students.

  B. Discuss each specific objective with the students.

  C. Have the students complete the objectives in a sequence best suited to your classroom.

  D. Add any objectives necessary to meet fully the needs of the unit and the student.

II. Pre/Post Test

  A. The Pre/Post Test may be used to determine students' knowledge of information prior to beginning the unit.

  B. The Pre/Post Test is divided into parts to correspond with each Information Sheet.

    1. The student may not need to cover each Information Sheet.

    2. The teacher may use the test to determine the area of information with which the student may need help.

    3. The Pre/Post Test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

  A. INFORMATION SHEET 1--TERMS AND DEFINITIONS

    1. Stress to the students the importance of understanding the terms used in solving problems using fractions.

    2. Use ACTIVITY SHEET 1--FINDING THE KEY TERMS to reinforce this area of information.

  B. INFORMATION SHEET 2--LEARNING ABOUT FRACTIONS

    1. Discuss what a fraction is.

    2. Discuss the parts of a fraction.

    3. Show TM-1--PARTS OF A FRACTION to reinforce this area of information.

4. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 2--PARTS OF A FRACTION

    b. ACTIVITY SHEET 3--IDENTIFYING FRACTIONS

    c. ACTIVITY SHEET 4--PICTURE THE FRACTION

    d. ACTIVITY SHEET 5--WORD PROBLEMS

    e. ACTIVITY SHEET 6--NUMBER FORMS

    f. ACTIVITY SHEET 7--WORD FORMS

C. INFORMATION SHEET 3--WORKING WITH FRACTIONS

1. Explain the meaning of "proper fractions."

2. Show TM-2--PROPER FRACTIONS and use ACTIVITY SHEET 8--IDENTIFYING PROPER FRACTIONS to reinforce this area of information.

3. Explain the meaning of "improper fractions."

4. Show TM-3--IMPROPER FRACTIONS and use ACTIVITY SHEET 9--IDENTIFYING IMPROPER FRACTIONS to reinforce this area of information.

5. Explain how improper fractions are changed to mixed numbers.

6. Show TM-4--IMPROPER FRACTIONS TO MIXED NUMBERS to reinforce this area of information.

7. Use ACTIVITY SHEET 10--CHANGING IMPROPER FRACTIONS TO MIXED NUMBERS to reinforce this area of instruction.

8. Explain how mixed numbers are changed to improper fractions.

9. Show TM-5--MIXED NUMBERS TO IMPROPER FRACTIONS.

10. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 11--CHANGING MIXED NUMBERS TO IMPROPER FRACTIONS

    b. ACTIVITY SHEET 12--CHANGING MIXED NUMBERS TO IMPROPER FRACTIONS

11. Explain how fractions are reduced.

12. Use ACTIVITY SHEET 13--REDUCING FRACTIONS to reinforce this area of instruction.

13. Explain the meaning of equivalent fractions.

14. Use ACTIVITY SHEET 14--EQUIVALENT FRACTION to reinforce this area of instruction.

D. INFORMATION SHEET 4--ADDING FRACTIONS

1. Explain how fractions with like denominators are added.
2. Show TM-6--ADDING FRACTIONS to reinforce this area of instruction.
3. Use ACTIVITY SHEET 15--ADDING FRACTIONS WITH LIKE DENOMINATORS to reinforce this area of instruction.
4. Explain how fractions with unlike denominators are added.
5. Show TM-7--ADDING WITH UNLIKE DENOMINATORS to reinforce this area of instruction.
6. Use ACTIVITY SHEET 16--ADDING FRACTIONS WITH UNLIKE DENOMINATORS to reinforce this area of instruction.
7. Explain how mixed numbers are added.
8. Show TM-8--ADDING MIXED NUMBERS to reinforce this area of instruction.
9. Use the following Activity Sheets to meet fully the unit objectives.
    a. ACTIVITY SHEET 17--ADDING MIXED NUMBERS WITH UNLIKE DENOMINATORS
    b. ACTIVITY SHEET 18--ADDING AND REDUCING
    c. ACTIVITY SHEET 19--ADDING MIXED NUMBERS

E. INFORMATION SHEET 5--SUBTRACTING FRACTIONS

1. Explain how to subtract fractions with like denominators.
2. Show TM-9--SUBTRACTING FRACTIONS to reinforce this area of instruction.
3. Use ACTIVITY SHEET 20--SUBTRACTING FRACTIONS WITH LIKE DENOMINATORS to reinforce this area of information.
4. Explain how to subtract fractions with unlike denominators.
5. Show TM-10--SUBTRACTING WITH UNLIKE DENOMINATORS to reinforce this area of instruction.
6. Use ACTIVITY SHEET 21--SUBTRACTING FRACTIONS WITH UNLIKE DENOMINATORS to reinforce this area of instruction.
7. Explain how fractions are subtracted from whole numbers.
8. Show TM-11--SUBTRACTING FROM WHOLE NUMBERS to reinforce this area of instruction.
9. Use ACTIVITY SHEET 22--SUBTRACTING FRACTIONS FROM WHOLE NUMBERS.
10. Explain how mixed numbers are subtracted.

11. Show TM-12--SUBTRACTING MIXED NUMBERS to reinforce this area of instruction.

12. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 23--SUBTRACTING MIXED FRACTIONS WITH UNLIKE DENOMINATORS

    b. ACTIVITY SHEET 24--SUBTRACTING MIXED NUMBERS

F. INFORMATION SHEET 6--MULTIPLYING FRACTIONS

1. Explain how fractions are multiplied.

2. Show TM-13--MULTIPLYING FRACTIONS to reinforce this area of information.

3. Use ACTIVITY SHEET 25--MULTIPLICATION OF FRACTIONS and ACTIVITY SHEET 26--MULTIPLICATION OF FRACTIONS.

4. Explain how fractions are multiplied by whole numbers.

5. Show TM-14--FRACTIONS AND WHOLE NUMBERS to reinforce this area of information.

6. Use ACTIVITY SHEET 27--MULTIPLYING WHOLE NUMBERS AND FRACTIONS.

7. Explain how factors are cancelled out.

8. Show TM-15--CANCELLING FRACTIONS to reinforce this area of information.

9. Explain how mixed numbers are multiplied.

10. Show TM-16--MULTIPLYING MIXED NUMBERS to reinforce this area of information.

11. Use ACTIVITY SHEET 28--MULTIPLYING WITH MIXED NUMBERS to meet fully the objectives of this unit.

G. INFORMATION SHEET 7--DIVIDING FRACTIONS

1. Explain how to invert a fraction.

2. Show TM-17--MULTIPLYING INVERSES OR RECIPROCALS to reinforce this area of instruction.

3. Use ACTIVITY SHEET 29--MULTIPLICATIVE INVERSES OR RECIPROCALS.

4. Explain how fractions are divided.

5. Show TM-18--DIVIDING FRACTIONS to reinforce this area of instruction.

6. Use ACTIVITY SHEET 30--DIVIDING FRACTIONS BY FRACTIONS.

7. Explain how to divide whole numbers and fractions.
8. Show TM-19--DIVIDING WHOLE NUMBERS BY FRACTIONS to reinforce this area of instruction.
9. Use the following Activity Sheets to meet fully the objectives of this unit.
    a. ACTIVITY SHEET 31--DIVIDING WHOLE NUMBERS BY FRACTIONS
    b. ACTIVITY SHEET 32--DIVIDING WHOLE NUMBERS BY FRACTIONS
10. Explain how to cancel in division of fractions.
11. Show TM-20--CANCELLING IN DIVISION to reinforce this area of instruction.
12. Explain how to divide mixed numbers.
13. Show TM-21--DIVIDING MIXED NUMBERS to reinforce this area of instruction.
14. Use the following Activity Sheets to meet fully the objectives of this unit.
    a. ACTIVITY SHEET 33--DIVIDING MIXED NUMBERS BY FRACTIONS
    b. ACTIVITY SHEET 34--DIVIDING FRACTIONS OR MIXED NUMBERS BY A WHOLE NUMBER
    c. ACTIVITY SHEET 35--DIVIDING MIXED OR WHOLE NUMBERS BY A MIXED NUMBER

IV. Answers to Pre/Post Test

A. Answers are based on total information covered in this unit.

B. Right and wrong answers may assist the teacher in discovering individual student weaknesses.

V. Answers to Activity Sheets

A. Some of the Activity Sheets will vary according to training and should be graded individually.

B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

A. The Unit Test is divided into seven parts.

1. Each part covers one Information Sheet.
2. Each part uses various methods of testing.

B. Various approaches may be used in testing.

  1. Give each part of the test after the student has completed the information in one information area or sheet.

  2. Give the entire test upon completion of all the Information and Activity Sheets.

  3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

C. Add test parts corresponding to any information areas of sheets added to the unit.

VII. Answers to Unit Tests

A. Answers are based on total information covered in the unit.

B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

A. Burstein, Jules. Skills in Mathematics 2. New York: Cambridge Book Company, 1973.

B. Cass, Angelica W. Skills in Mathematics 1. New York: Cambridge Book Company, 1973.

UNIT VI

FRACTIONS

ANSWERS TO PRE/POST TEST

PART 1

1. c
2. a
3. b
4. d

PART 2

A. 1. $\frac{\textcircled{3}}{4}$ 2. $\frac{\textcircled{7}}{8}$ 3. $\frac{\textcircled{1}}{2}$ 4. $\frac{\textcircled{9}}{11}$ 5. $\frac{\textcircled{4}}{5}$

B. 1. b
2. a
3. d
4. c

PART 3

A. 1. $\frac{7}{8}$, $\frac{2}{3}$
2. $\frac{2}{3}$
3. $\frac{4}{9}$, $\frac{1}{5}$
4. $\frac{8}{9}$, $\frac{6}{7}$, $\frac{5}{6}$

B. 1. $\frac{5}{3}$
2. $\frac{10}{9}$
3. $\frac{5}{3}$, $\frac{5}{2}$
4. $\frac{7}{3}$

C. 1. $1\frac{3}{4}$
2. $1\frac{4}{5}$

D. 1. $\frac{5}{2}$
2. $\frac{15}{8}$

E. 1. $\frac{2}{6}$ (there are other correct answers)
2. $\frac{16}{18}$

PART 4

1. $\frac{11}{12}$
2. $\frac{2}{3}$
3. $\frac{3}{4}$
4. $\frac{11}{12}$
5. $\frac{5}{6}$
6. $\frac{1}{2}$
7. $\frac{1}{3}$
8. $6\frac{7}{8}$

ANSWERS TO TEST

PART 5

1. $\frac{5}{8}$
2. $\frac{3}{7}$
3. $3\,\frac{2}{15}$
4. $4\,\frac{8}{21}$
5. $1\,\frac{2}{3}$
6. $6\,\frac{5}{8}$
7. $2\,\frac{2}{3}$
8. $4\,\frac{8}{9}$
9. $\frac{1}{2}$
10. $2\,\frac{15}{32}$

PART 6

1. $\frac{1}{8}$
2. $\frac{1}{3}$
3. 55
4. $6\,\frac{1}{6}$
5. $1\,\frac{11}{20}$

PART 7

1. $2\,\frac{1}{12}$
2. 1
3. 8
4. 26
5. 6

UNIT VI

FRACTIONS

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1

1. fraction
2. factor
3. lowest terms
4. reciprocal
5. proper fraction
6. denominator
7. improper fraction
8. borrow
9. invert
10. numerator

ACTIVITY SHEET 2

1. a. 5, 7
   b. numerator, denominator
   c. 1, 3

2. a. $\frac{10}{17}$
   b. $\frac{16}{37}$

3. a. 1
   b. 8
   c. $\frac{1}{8}$

ACTIVITY SHEET 3

a. 4
b. 10
c. 16
d. 6
e. 9
f. 3
g. 15
h. 14
i. 2
j. 11
k. 13
l. 12
m. 1
n. 5
o. 7

ACTIVITY SHEET 4

Evaluated to the satisfaction of the instructor.

ACTIVITY SHEET 5

1. a. $\frac{5}{12}$ b. Evaluated to the satisfaction of the instructor.
2. a. $\frac{3}{8}$ b. " " "
3. a. $\frac{5}{6}$ b. " " "
4. a. $\frac{1}{4}$ b. " " "
5. a. $\frac{4}{5}$ b. " " "

ACTIVITY SHEET 6

1. $\frac{1}{2}$
2. $\frac{7}{10}$
3. $\frac{8}{9}$
4. $\frac{3}{4}$
5. $\frac{4}{10}$
6. $\frac{2}{3}$
7. $\frac{5}{4}$
8. $\frac{6}{5}$
9. $\frac{5}{6}$
10. $\frac{9}{11}$
11. $\frac{11}{15}$
12. $\frac{4}{7}$
13. $\frac{10}{13}$
14. $\frac{3}{40}$
15. $\frac{5}{8}$
16. $\frac{15}{16}$
17. $\frac{17}{18}$
18. $\frac{12}{19}$
19. $\frac{5}{11}$
20. $\frac{13}{17}$

ACTIVITY SHEET 7

1. two fourths
2. three fifths
3. four tenths
4. six ninths
5. three twelfths
6. nine fifteenths
7. eight twelfths
8. six eighteenths
9. three eighths
10. ten fourteenths
11. two thirds
12. one half
13. four fifths
14. eleven thirteenths
15. three sevenths
16. one sixth
17. seven twelfths
18. five sixteenths
19. eleven twelfths
20. nine elevenths

ACTIVITY SHEET 8

1. $\frac{1}{2}, \frac{2}{3}$
2. $\frac{3}{4}, \frac{2}{5}$
3. $\frac{1}{5}, \frac{3}{8}$
4. $\frac{5}{7}, \frac{1}{5}$
5. $\frac{7}{8}, \frac{2}{3}$
6. $\frac{10}{11}, \frac{1}{7}$
7. $\frac{3}{5}, \frac{1}{16}$
8. $\frac{1}{4}, \frac{3}{4}, \frac{1}{2}$
9. $\frac{3}{5}, \frac{1}{8}$
10. $\frac{2}{3}$
11. $\frac{1}{9}, \frac{3}{7}$
12. $\frac{1}{6}, \frac{3}{4}, \frac{4}{7}$
13. $\frac{5}{8}, \frac{3}{10}$
14. $\frac{4}{9}, \frac{1}{5}$
15.
16. $\frac{2}{3}, \frac{3}{8}$
17. $\frac{6}{7}, \frac{6}{11}$
18. $\frac{7}{15}, \frac{5}{13}, \frac{3}{10}$
19. $\frac{2}{5}, \frac{7}{9}, \frac{3}{5}$
20. $\frac{8}{9}, \frac{6}{7}, \frac{5}{6}$

ACTIVITY SHEET 9

1. $\frac{9}{7}$
2. $\frac{7}{5}$
3. $\frac{5}{3}$
4. $\frac{16}{11}, \frac{13}{10}$
5. $\frac{4}{3}, \frac{8}{5}$
6. $\frac{10}{9}$
7. $\frac{7}{5}, \frac{16}{9}$
8. $\frac{9}{5}$
9. $\frac{5}{2}$
10. $\frac{6}{1}$
11. $\frac{5}{3}$
12. $\frac{10}{7}$
13. $\frac{5}{3}, \frac{5}{2}$
14. $\frac{9}{8}$
15. $\frac{11}{7}$
16. $\frac{4}{3}$
17. $\frac{7}{3}, \frac{3}{1}, \frac{14}{11}$
18. $\frac{7}{3}$
19. $\frac{8}{1}, \frac{7}{5}$
20. $\frac{8}{3}, \frac{4}{3}$

ACTIVITY SHEET 10

1. $2\frac{1}{8}$
2. $1\frac{4}{7}$
3. $1\frac{2}{3}$
4. $1\frac{1}{3}$
5. $2\frac{1}{2}$
6. $1\frac{1}{6}$
7. $1\frac{1}{2}$
8. $1\frac{4}{5}$
9. $1\frac{3}{4}$
10. $1\frac{1}{7}$

ACTIVITY SHEET 11

1. $\frac{13}{4}$
2. $\frac{15}{2}$
3. $\frac{33}{5}$
4. $\frac{37}{4}$
5. $\frac{13}{8}$
6. $\frac{43}{9}$
7. $\frac{49}{8}$
8. $\frac{21}{10}$
9. $\frac{26}{3}$
10. $\frac{51}{4}$

ACTIVITY SHEET 12

1. $\frac{9}{4}$
2. $\frac{25}{8}$
3. $\frac{12}{5}$
4. $\frac{35}{8}$
5. $\frac{21}{4}$
6. $\frac{17}{5}$
7. $\frac{13}{3}$
8. $\frac{23}{3}$
9. $\frac{3}{2}$
10. $\frac{11}{4}$

ACTIVITY SHEET 13

1. $\frac{3}{4}$
2. $\frac{1}{3}$
3. $\frac{1}{3}$
4. $\frac{1}{3}$
5. $\frac{1}{4}$
6. $\frac{1}{4}$
7. $\frac{1}{2}$
8. $\frac{1}{2}$
9. $\frac{1}{16}$
10. $\frac{1}{4}$
11. $\frac{1}{3}$
12. $\frac{1}{7}$
13. $\frac{1}{8}$
14. $\frac{1}{2}$
15. $\frac{1}{4}$
16. $\frac{1}{2}$
17. $\frac{1}{8}$
18. $\frac{1}{6}$
19. $\frac{1}{2}$
20. $\frac{1}{2}$

ACTIVITY SHEET 14

Evaluated to the satisfaction of the instructor.

ACTIVITY SHEET 15

1. $\frac{3}{4}$
2. $\frac{15}{16}$
3. $\frac{11}{12}$
4. $\frac{5}{8}$
5. $\frac{2}{3}$
6. $\frac{1}{2}$
7. $\frac{3}{4}$
8. $\frac{3}{8}$
9. $\frac{1}{4}$
10. $\frac{6}{7}$
11. $\frac{11}{12}$
12. $\frac{5}{8}$
13. $\frac{7}{8}$
14. $\frac{3}{4}$
15. $\frac{13}{16}$
16. 1
17. $\frac{13}{32}$
18. $\frac{43}{64}$
19. $\frac{7}{8}$
20. $\frac{9}{16}$

ACTIVITY SHEET 16

A.
1. $1\frac{1}{4}$
2. $\frac{11}{12}$
3. $\frac{9}{10}$
4. $1\frac{1}{6}$
5. $1\frac{1}{24}$
6. $\frac{23}{30}$
7. $1\frac{2}{5}$
8. $\frac{5}{6}$

B.
1. $1\frac{11}{12}$
2. $\frac{23}{24}$
3. $1\frac{11}{30}$
4. $\frac{7}{8}$
5. $1\frac{1}{5}$
6. $1\frac{1}{3}$
7. $1\frac{7}{60}$
8. $1\frac{5}{24}$

ACTIVITY SHEET 17

1. $9\frac{3}{4}$
2. $13\frac{1}{2}$
3. $16\frac{1}{4}$
4. $8\frac{1}{5}$
5. $9\frac{1}{5}$
6. $15\frac{5}{12}$
7. $12\frac{5}{24}$
8. $11\frac{7}{20}$
9. $5\frac{3}{8}$
10. $2\frac{5}{6}$
11. $9\frac{1}{2}$
12. 52

ACTIVITY SHEET 18

1. $\frac{1}{2}$
2. $\frac{2}{3}$
3. $\frac{1}{2}$
4. $\frac{7}{8}$
5. $\frac{3}{4}$
6. 1
7. $\frac{1}{2}$
8. $\frac{3}{4}$
9. $\frac{1}{2}$
10. $\frac{3}{16}$
11. $\frac{1}{3}$
12. $\frac{1}{3}$
13. 1
14. $\frac{1}{2}$
15. $\frac{3}{5}$
16. $\frac{1}{7}$
17. $\frac{1}{2}$
18. $\frac{7}{8}$

ACTIVITY SHEET 19

1. $6\frac{7}{8}$
2. $6\frac{7}{12}$
3. $27\frac{3}{4}$
4. $41\frac{11}{12}$
5. $7\frac{2}{3}$
6. $12\frac{5}{12}$
7. $15\frac{3}{4}$
8. $10\frac{5}{6}$
9. $4\frac{5}{8}$
10. $9\frac{13}{16}$
11. $10\frac{9}{32}$
12. $6\frac{23}{64}$

ACTIVITY SHEET 20

1. $\frac{5}{8}$
2. $\frac{1}{2}$
3. $\frac{1}{3}$
4. $\frac{3}{8}$
5. $\frac{1}{8}$
6. $\frac{1}{2}$
7. $\frac{7}{32}$
8. $\frac{1}{4}$
9. $\frac{1}{4}$
10. $\frac{2}{3}$
11. $\frac{5}{8}$
12. $\frac{7}{8}$
13. $\frac{3}{7}$
14. $\frac{4}{11}$
15. $\frac{3}{8}$

ACTIVITY SHEET 21

1. $\frac{5}{12}$
2. $3\frac{2}{15}$
3. $2\frac{7}{30}$
4. $14\frac{2}{9}$
5. $4\frac{8}{21}$
6. $\frac{13}{24}$
7. $25\frac{1}{8}$
8. $3\frac{1}{30}$
9. $61\frac{5}{18}$
10. $47\frac{1}{8}$

ACTIVITY SHEET 22

1. $2\frac{2}{3}$
2. $1\frac{3}{4}$
3. $3\frac{3}{5}$
4. $1\frac{1}{8}$
5. $3\frac{4}{5}$
6. $2\frac{5}{6}$
7. $1\frac{3}{8}$
8. $3\frac{2}{5}$
9. $5\frac{1}{8}$
10. $6\frac{7}{8}$
11. $4\frac{1}{2}$
12. $7\frac{1}{3}$
13. $6\frac{5}{8}$
14. $7\frac{8}{9}$
15. $2\frac{3}{5}$
16. $4\frac{8}{9}$
17. $5\frac{5}{7}$
18. $7\frac{5}{7}$
19. $8\frac{1}{3}$
20. $4\frac{3}{4}$

ACTIVITY SHEET 23

1. $1\frac{13}{20}$
2. $3\frac{1}{6}$
3. $1\frac{2}{3}$
4. $12\frac{17}{24}$
5. $8\frac{5}{6}$
6. $38\frac{13}{15}$
7. $11\frac{5}{8}$
8. $36\frac{1}{2}$
9. $65\frac{9}{10}$
10. $49\frac{1}{12}$

ACTIVITY SHEET 24

1. $\frac{1}{2}$
2. $\frac{1}{5}$
3. $\frac{1}{3}$
4. $3\frac{5}{8}$
5. $1\frac{2}{5}$
6. $12\frac{2}{3}$
7. $4\frac{1}{2}$
8. $2\frac{15}{32}$
9. $3\frac{1}{4}$
10. $8\frac{1}{5}$

ACTIVITY SHEET 25

1. $\frac{1}{8}$
2. $\frac{1}{24}$
3. $\frac{1}{20}$
4. $\frac{1}{20}$
5. $\frac{1}{64}$
6. $\frac{3}{10}$
7. $\frac{35}{48}$
8. $\frac{21}{64}$
9. $\frac{27}{80}$
10. $\frac{5}{36}$
11. $\frac{1}{5}$
12. $\frac{3}{5}$
13. $\frac{1}{10}$
14. $\frac{1}{3}$
15. $\frac{5}{7}$
16. $\frac{5}{16}$
17. $\frac{11}{14}$
18. $\frac{7}{10}$

ACTIVITY SHEET 26

1. $\frac{1}{6}$
2. $\frac{3}{5}$
3. $\frac{2}{5}$
4. $\frac{2}{3}$
5. $\frac{1}{6}$
6. $\frac{2}{3}$
7. $\frac{9}{56}$
8. $\frac{1}{2}$
9. $\frac{7}{9}$
10. $\frac{27}{32}$
11. $\frac{1}{12}$
12. $\frac{1}{4}$
13. $\frac{1}{2}$
14. $\frac{1}{6}$
15. $\frac{11}{20}$
16. $\frac{3}{16}$
17. $\frac{1}{54}$
18. $\frac{8}{21}$
19. $\frac{2}{5}$
20. $\frac{21}{40}$

ACTIVITY SHEET 27

1. $3\frac{3}{4}$
2. $\frac{3}{5}$
3. 55
4. 5
5. $17\frac{1}{2}$
6. $13\frac{3}{4}$
7. 7
8. 18
9. $8\frac{1}{6}$
10. $4\frac{9}{10}$

ACTIVITY SHEET 28

1. $1\frac{7}{8}$
2. $1\frac{17}{32}$
3. $\frac{7}{15}$
4. $1\frac{11}{20}$
5. $1\frac{23}{40}$
6. $\frac{11}{40}$
7. $2\frac{6}{7}$
8. $1\frac{11}{28}$
9. $2\frac{21}{32}$
10. $1\frac{13}{32}$
11. $1\frac{4}{7}$
12. $1\frac{1}{27}$
13. $\frac{33}{40}$
14. $\frac{17}{24}$
15. $3\frac{1}{6}$

ACTIVITY SHEET 29

1. $\frac{9}{8}$
2. $\frac{1}{7}$
3. $\frac{4}{13}$
4. $\frac{6}{5}$
5. $\frac{7}{22}$
6. $\frac{2}{5}$
7. $\frac{32}{25}$
8. $\frac{5}{28}$
9. 10
10. $\frac{1}{25}$

ACTIVITY SHEET 30

1. 2
2. $1\frac{1}{7}$
3. $2\frac{1}{12}$
4. $1\frac{2}{3}$
5. $1\frac{2}{3}$
6. $\frac{2}{5}$
7. $3\frac{3}{7}$
8. $\frac{25}{28}$
9. 2
10. $\frac{5}{6}$
11. $1\frac{1}{5}$
12. $1\frac{1}{4}$
13. $\frac{1}{2}$
14. $1\frac{1}{24}$
15. $\frac{2}{3}$
16. 4
17. $1\frac{1}{2}$
18. $1\frac{5}{6}$
19. 1
20. $1\frac{1}{8}$

ACTIVITY SHEET 31

1. 20
2. 8
3. 50
4. 36
5. 48
6. 75
7. 27
8. 100
9. 200
10. 100
11. 16
12. 21
13. 72
14. 84
15. 144
16. 32
17. 50
18. 26
19. 200
20. 100

ACTIVITY SHEET 32

1. $5\frac{1}{3}$
2. $7\frac{1}{2}$
3. $1\frac{1}{2}$
4. 9
5. $6\frac{2}{3}$
6. $12\frac{1}{2}$
7. $13\frac{1}{2}$
8. $9\frac{1}{3}$
9. $7\frac{1}{2}$
10. 32
11. 10
12. $9\frac{3}{5}$
13. $11\frac{3}{7}$
14. 25
15. 49
16. 22
17. 22
18. $16\frac{5}{7}$
19. 33
20. $14\frac{2}{7}$

ACTIVITY SHEET 33

1. $8\frac{2}{3}$
2. $14\frac{4}{5}$
3. $21\frac{2}{3}$
4. $5\frac{2}{3}$
5. $3\frac{4}{7}$
6. 6
7. $4\frac{1}{4}$
8. $10\frac{4}{5}$
9. $7\frac{1}{12}$
10. $8\frac{2}{3}$
11. $8\frac{1}{3}$
12. $9\frac{3}{8}$
13. $2\frac{1}{2}$
14. $16\frac{7}{8}$
15. 4
16. $2\frac{7}{16}$
17. 8
18. 9
19. 6
20. 8

ACTIVITY SHEET 34

1. $\frac{7}{24}$
2. $1\frac{17}{24}$
3. $\frac{2}{21}$
4. $2\frac{1}{4}$
5. $\frac{1}{25}$
6. $1\frac{1}{4}$
7. $\frac{1}{4}$
8. $1\frac{1}{3}$
9. $\frac{8}{15}$
10. $1\frac{7}{80}$
11. $\frac{1}{4}$
12. $\frac{8}{9}$
13. $1\frac{1}{6}$
14. $\frac{6}{72}$
15. $1\frac{1}{7}$
16. $\frac{3}{25}$
17. $2\frac{1}{4}$
18. $\frac{4}{7}$
19. $\frac{4}{13}$
20. 16

ACTIVITY SHEET 35

1. $1\frac{11}{15}$
2. $\frac{4}{5}$
3. $1\frac{1}{8}$
4. $1\frac{13}{32}$
5. $1\frac{5}{7}$
6. $1\frac{13}{27}$
7. 20
8. 2
9. $3\frac{1}{9}$
10. $1\frac{1}{3}$
11. $3\frac{1}{3}$
12. $1\frac{37}{70}$
13. $3\frac{3}{5}$
14. $2\frac{1}{10}$
15. $3\frac{3}{5}$
16. $\frac{5}{7}$
17. $2\frac{4}{5}$
18. 10
19. 4
20. $\frac{1}{8}$

UNIT VI

FRACTIONS

ANSWERS TO UNIT TEST

PART 1

1. b
2. f
3. c
4. d
5. g
6. a
7. e
8. j
9. a
10. i

PART 2

A. 1. 5, 7
   2. 9, 10
   3. 2, 3

B. 1. b
   2. a
   3. d
   4. c

C. Evaluated to the satisfaction of the instructor.

D. 1. $\frac{3}{4}$
   2. $\frac{4}{7}$
   3. $\frac{5}{8}$
   4. $\frac{2}{3}$

PART 3

A. 1. $\frac{1}{2}, \frac{2}{3}$
   2. $\frac{7}{8}, \frac{2}{3}$
   3. $\frac{1}{4}, \frac{3}{4}, \frac{1}{2}$
   4. $\frac{2}{3}$
   5. $\frac{1}{9}, \frac{3}{9}$
   6. $\frac{1}{6}, \frac{3}{4}, \frac{4}{7}$
   7. $\frac{4}{9}, \frac{1}{5}$
   8. 0
   9. $\frac{7}{15}, \frac{5}{13}, \frac{3}{10}$
   10. $\frac{8}{9}, \frac{6}{7}, \frac{5}{6}$

B. 1. $\frac{9}{7}$
   2. $\frac{5}{3}$
   3. $\frac{16}{11}, \frac{13}{10}$
   4. $\frac{10}{9}$
   5. $\frac{5}{2}$
   6. $\frac{5}{3}$
   7. $\frac{5}{3}, \frac{5}{2}$
   8. $\frac{7}{6}, \frac{11}{7}$
   9. $\frac{7}{3}$
   10. $\frac{8}{3}, \frac{4}{3}$

C. 1. $2\frac{1}{8}$
   2. $1\frac{3}{4}$
   3. $1\frac{4}{5}$
   4. $1\frac{1}{7}$

D. 1. $\frac{5}{2}$
   2. $\frac{11}{3}$
   3. $\frac{17}{4}$
   4. $\frac{15}{8}$

E. 1. $\frac{2}{6}$
   2. $\frac{14}{20}$
   3. $\frac{16}{18}$
   4. $\frac{4}{6}$

(There are other correct answers.)

PART 4

A. 1. $\frac{11}{12}$
   2. $\frac{1}{4}$
   3. $\frac{2}{3}$
   4. $\frac{3}{4}$
   5. $\frac{7}{8}$

B. 1. $\frac{11}{12}$
   2. $\frac{7}{10}$
   3. $\frac{5}{6}$
   4. $\frac{23}{30}$
   5. $\frac{9}{10}$

C. 1. $\frac{1}{2}$
2. $\frac{3}{4}$
3. $\frac{1}{3}$
4. 1
5. $\frac{3}{5}$

D. 1. $6\frac{7}{8}$
2. $12\frac{5}{12}$
3. $10\frac{5}{6}$
4. $9\frac{13}{16}$
5. $6\frac{23}{64}$

PART 5

A. 1. $\frac{5}{8}$
2. $\frac{7}{32}$
3. $\frac{5}{8}$
4. $\frac{3}{7}$
5. $\frac{4}{11}$

B. 1. $3\frac{2}{15}$
2. $14\frac{2}{9}$
3. $4\frac{8}{21}$
4. $\frac{13}{24}$
5. $3\frac{1}{30}$

C. 1. $1\frac{9}{10}$
2. $1\frac{2}{3}$
3. $8\frac{5}{6}$
4. $38\frac{13}{15}$
5. $36\frac{1}{2}$

D. 1. $2\frac{2}{3}$
2. $3\frac{3}{5}$
3. $3\frac{4}{5}$
4. $6\frac{5}{8}$
5. $4\frac{8}{9}$

E. 1. $\frac{1}{2}$
2. $1\frac{2}{15}$
3. $4\frac{1}{2}$
4. $2\frac{15}{32}$
5. $8\frac{1}{5}$

PART 6

A. 1. $\frac{1}{8}$
2. $\frac{1}{20}$
3. $\frac{5}{36}$
4. $\frac{1}{3}$
5. $\frac{5}{16}$

B. 1. $3\frac{3}{4}$
2. 55
3. 7
4. $8\frac{1}{6}$
5. $4\frac{45}{64}$

C. 1. $1\frac{11}{20}$
2. $\frac{11}{40}$
3. $1\frac{4}{7}$
4. $1\frac{1}{27}$
5. $\frac{17}{24}$

D. 1. $\frac{1}{3}$
2. $\frac{1}{10}$
3. 9
4. $\frac{15}{64}$
5. $\frac{1}{16}$

PART 7

A. 1. $\frac{9}{8}$
2. $\frac{4}{13}$
3. $\frac{2}{5}$
4. $\frac{5}{28}$
5. 10

B. 1. $2\frac{1}{12}$
2. $1\frac{2}{3}$
3. $1\frac{1}{2}$
4. 1
5. $\frac{5}{12}$

C. 1. 8
2. 27
3. 72
4. 26
5. 32

D. 1. $14\frac{4}{5}$
2. $5\frac{2}{3}$
3. $10\frac{4}{5}$
4. 8
5. 6
6. $1\frac{17}{24}$
7. $2\frac{1}{4}$
8. $1\frac{1}{7}$
9. $2\frac{4}{5}$
10. $\frac{3}{4}$

UNIT VI

FRACTIONS

PRE/POST TEST

PART 1

Match the following terms with their definitions by placing the correct letter in the blank at the left.

_____ 1. Denominator

_____ 2. Factor

_____ 3. Fraction

_____ 4. Numerator

a. any number by which both the numerator and denominator can be divided

b. a part of a whole number

c. the bottom number of a fraction which tells the number of parts into which the whole was divided

d. the top number of a fraction which tells you the number of parts you have taken away or left

PART 2

A. Identify the numerator in the following fractions by circling it.

1. $\frac{3}{4}$ 2. $\frac{7}{8}$ 3. $\frac{1}{2}$ 4. $\frac{9}{11}$ 5. $\frac{4}{5}$

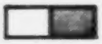
B. Match the fractions with the shaded figures by placing the correct letter in the blanks at the left.

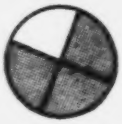
_____ 1. $\frac{3}{4}$

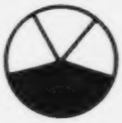
_____ 2. $\frac{1}{2}$

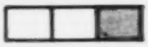
_____ 3. $\frac{1}{3}$

_____ 4. $\frac{2}{5}$

a. 

b. 

c. 

d. 

PART 3

A. Circle the proper fraction(s) within each group of fractions.

1. $\frac{7}{8}, \frac{2}{3}, \frac{4}{3}$

2. $\frac{2}{3}, \frac{3}{2}, \frac{7}{5}$

3. $\frac{4}{9}, \frac{1}{5}, \frac{3}{2}$

4. $\frac{8}{9}, \frac{6}{7}, \frac{5}{6}$

B. Circle the improper fraction(s) within each group of fractions.

1. $\frac{1}{5}, \frac{3}{4}, \frac{5}{3}$ 3. $\frac{5}{8}, \frac{5}{3}, \frac{5}{2}$

2. $\frac{3}{8}, \frac{2}{5}, \frac{10}{9}$ 4. $\frac{1}{9}, \frac{3}{7}, \frac{7}{3}$

C. Change the following improper fractions to mixed numbers.

1. $\frac{7}{4} =$ 2. $\frac{9}{5} =$

D. Change the following mixed numbers to improper fractions.

1. $2\frac{1}{2} =$ 2. $1\frac{7}{8} =$

E. Find the equivalent fraction for the following fractions.

1. $\frac{1}{3}$ 2. $\frac{8}{9}$

PART 4

Add the following fractions.

1. $\frac{6}{12} + \frac{5}{12} =$ 2. $\frac{1}{3} + \frac{1}{3} =$ 3. $\frac{2}{4} + \frac{1}{4} =$

4. $\frac{2}{3} + \frac{1}{4} =$ 5. $\frac{1}{12} + \frac{3}{4} =$ 6. $\frac{3}{8} + \frac{1}{8} =$

7. $\frac{3}{15} + \frac{2}{15} =$ 8. $\begin{array}{r} 4\frac{1}{8} \\ +\ 2\frac{6}{8} \\ \hline \end{array}$

PART 5

Subtract the following fractions.

1. $\frac{7}{8} - \frac{2}{8} =$ 2. $\frac{5}{7} - \frac{2}{7} =$ 3. $\begin{array}{r} 6\frac{4}{5} \\ -\ 3\frac{2}{3} \\ \hline \end{array}$

4. $\begin{array}{r} 9\frac{5}{7} \\ -\ 5\frac{1}{3} \\ \hline \end{array}$ 5. $\begin{array}{r} 6\frac{1}{3} \\ -\ 4\frac{2}{3} \\ \hline \end{array}$ 6. $7 - \frac{3}{8} =$ 7. $3 - \frac{1}{3} =$

9. $\begin{array}{r} \frac{5}{8} \\ -\ \frac{1}{8} \\ \hline \end{array}$ 10. $\begin{array}{r} 5\frac{15}{32} \\ -\ 3 \\ \hline \end{array}$

8. $5 - \frac{1}{9} =$

PART 6

Multiply the following fractions.

1. $\frac{1}{4} \times \frac{1}{2} =$

2. $\frac{2}{3} \times \frac{1}{2} =$

3. $10 \times 5\,\frac{1}{2} =$

4. $2\,\frac{1}{3} \times 3\,\frac{1}{2} =$

5. $\frac{2}{5} \times 3\,\frac{7}{8} =$

PART 7

Divide the following fractions.

1. $\frac{5}{6} \div \frac{2}{5} =$

2. $\frac{15}{17} \div \frac{30}{34} =$

3. $2 \div \frac{1}{4} =$

4. $2 \div \frac{1}{13} =$

5. $3\,\frac{3}{11} \div \frac{6}{11} =$

UNIT VI

FRACTIONS

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. Borrow--using one from the digit to the left
2. Denominator--the bottom number of a fraction which tells you the number of parts into which the whole was divided
3. Factor--any number by which both the numerator and denominator can be divided
4. Fraction--a part of a whole number
5. Invert--turn over; 1/3 inverted is 3/1
6. Improper fraction--any fraction in which the numerator is larger than the denominator
7. Lowest terms--the lowest possible numbers to which the numerator and denominator may be reduced without changing the value of the fraction
8. Numerator--the top number of a fraction which tells you the number of parts you have taken away or have left
9. Proper fraction--any fraction in which the numerator is less than the denominator
10. Reciprocals--the fraction with its numerator and denominator exchanged

UNIT VI

FRACTIONS

ACTIVITY SHEET 1--FINDING THE KEY TERMS

Directions: Fill in each blank in the terms and definitions below by changing the numbers to letters using the key.

1=A
2=B
3=C
4=D
5=E
6=F
7=G
8=H
9=I
10=J
11=K
12=L
13=M
14=N
15=O
16=P
17=Q
18=R
19=S
20=T
21=U
22=V
23=W
24=X
25=Y
26=Z

1. A part of a whole number is a __ __ __ __ __ __ __ __.
6 18 1 3 20 9 15 14

2. The __ __ __ __ __ __ is any number by which both the numerator and the denominator can be divided.
6 1 3 20 15 18

3. When the numerator and the denominator are reduced to the lowest numbers possible without changing the value of the fraction, they are in their __ __ __ __ __ __ __ __ __ __ __.
12 15 23 5 19 20 20 5 18 13 19

4. The __ __ __ __ __ __ __ __ __ __ of any fraction is the fraction with its numerator and denominator exchanged.
18 5 3 9 16 18 15 3 1 12

5. Any fraction in which the numerator is less than the denominator is a __ __ __ __ __ __ __ __ __ __ __ __ __ __.
16 18 15 16 5 18 6 18 1 3 20 9 15 14

6. The __ __ __ __ __ __ __ __ __ __ __ is the bottom number of a fraction which tells you the number of parts into which the whole was divided.
4 5 14 15 13 9 14 1 20 15 18

7. Any fraction in which the numerator is larger than the denominator is an __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __.
9 13 16 18 15 16 5 18 6 18 1 3 20 9 15 14

8. When you use one from the digit to the left you __ __ __ __ __ __.
2 15 18 18 15 23

9. When you turn over a fraction, you __ __ __ __ __ __ it.
9 14 22 5 18 20

10. The top number of a fraction which tells you the number of parts you have taken away or left is the __ __ __ __ __ __ __ __ __.
14 21 13 5 18 1 20 15 18

ACTIVITY

UNIT VI

FRACTIONS

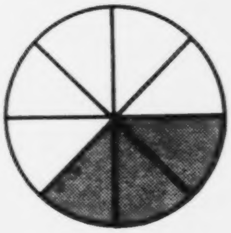
INFORMATION SHEET 2--LEARNING ABOUT FRACTIONS

I. What is a Fraction?

A. Fractions are not whole numbers.

B. Fractions are parts of whole numbers.

EXAMPLE:



A pie is cut into eight equal slices.
You eat three slices.
You have eaten three of eight or 3/8 of the pie.

$\frac{3}{8}$ 3 = the number of slices you have eaten
8 = the number of slices the pie had

II. Parts of a Fraction

A. The top number of a fraction is called the numerator.

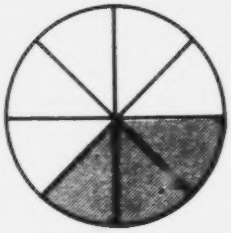
B. The numerator tells you the number of parts you have taken away or have left.

C. The bottom number of a fraction is called the denominator.

D. The denominator tells you the number of parts into which the whole was divided.

EXAMPLE: Look at the pie again. If 3/8 of the pie was eaten:

3 = numerator
8 = denominator



INFORMATION

PARTS OF A FRACTION

Numerator

tells you the number
of parts you have
taken away or have left

$^{3}/_{4}$

Denominator

tells you the number
of parts the whole
was divided into

FRACTIONS

ACTIVITY SHEET 2--PARTS OF A FRACTION

Directions: Read each instruction carefully and fill in the blank.

1. In the following fractions, identify the numerator and denominator of each by filling in the blanks.
   a. In the fraction $\frac{5}{7}$, the numerator is _____ and the denominator is _____.
   b. In the fraction $\frac{8}{18}$, 8 is the __________ and 18 is the _______________.
   c. In the fraction $\frac{1}{3}$, what is the numerator? _____ What is the denominator? _____
2. Write fractions which fit the following statements.
   a. A fraction with a denominator of 17 and a numerator of 10.

      ____

   b. A fraction with a numerator of 16 and a denominator of 37.

      ____

3. A pie is cut into 8 equal pieces and 1 of the 8 pieces is eaten.
   a. Which number represents the numerator? __________
   b. Which number represents the denominator? __________
   c. What fractional part of the pie was eaten? __________

ACTIVITY

UNIT VI

FRACTIONS

ACTIVITY SHEET 3--IDENTIFYING FRACTIONS

Directions: Match the fractions with the shaded figures by writing the correct number in the blanks. There are more figures than fractions.

__________a. $\frac{4}{8}$

__________b. $\frac{2}{2}$

__________c. $\frac{6}{16}$

__________d. $\frac{3}{7}$

__________e. $\frac{5}{5}$

__________f. $\frac{1}{2}$

__________g. $\frac{2}{7}$

__________h. $\frac{5}{6}$

__________i. $\frac{1}{4}$

__________j. $\frac{2}{3}$

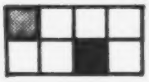
__________k. $\frac{7}{8}$

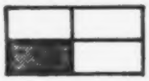
__________l. $\frac{3}{5}$

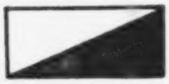
__________m. $\frac{2}{8}$

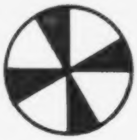
__________n. $\frac{3}{3}$

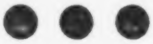
__________o. $\frac{1}{5}$

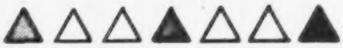
1. 

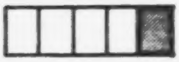
2. 

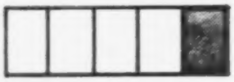
3. 

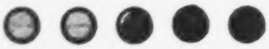
4. 

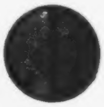
5. 

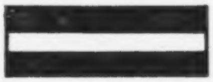
6. 

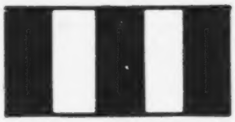
7. 

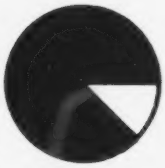
8. 

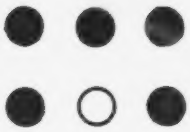
9. 

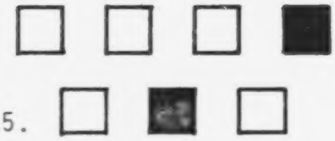
10. 

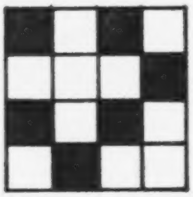
11. 

12. 

13. 

14. 

15. 

16. 

ACTIVITY

FRACTIONS

ACTIVITY SHEET 4--PICTURE THE FRACTION

Directions: Draw a suitable figure to represent each of the following fractions.

EXAMPLE: $\frac{3}{6}$

a. $\frac{1}{2}$

b. $\frac{3}{4}$

c. $\frac{2}{3}$

d. $\frac{1}{4}$

e. $\frac{7}{8}$

f. $\frac{5}{16}$

g. $\frac{3}{3}$

h. $\frac{2}{4}$

i. $\frac{3}{8}$

j. $\frac{13}{16}$

ACTIVITY

UNIT VI

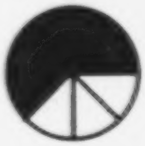
FRACTIONS

ACTIVITY SHEET 5--WORD PROBLEMS

Directions: For each problem below, a) write the correct fraction and b) draw a figure which represents the fraction.

EXAMPLE: A cup contains 8 ounces. What fractional part of a cup is 5 ounces?

a. $\frac{5}{8}$ b.



1. Mrs. Meade baked a cake in which 5 eggs were used. What part of a dozen eggs was used?

a. _____ b.

2. The chairperson of the sophomore dance gave Mitch 8 tickets. Mitch sold 3 of them. What fractional part of the tickets did he sell?

a. _____ b.

3. A foot has 12 inches. What fractional part of a foot is 10 inches?

a. _____ b.

4. A dollar contains 4 quarters. What fractional part of a dollar is 1 quarter?

a. _____ b.

5. A $5 bill contains five $1 bills. What fractional part of a $5 bill is $4?

a. _____ b.

UNIT VI

FRACTIONS

ACTIVITY SHEET 6--NUMBER FORMS

Directions: Use the number form to write the following.

1. one-half __________
2. seven-tenths __________
3. eight-ninths __________
4. three-fourths __________
5. four-tenths __________
6. two-thirds __________
7. five-fourths __________
8. six-fifths __________
9. five-sixths __________
10. nine-elevenths __________
11. eleven-fifteenths __________
12. four-sevenths __________
13. ten-thirteenths __________
14. three-fortieths __________
15. five-eighths __________
16. fifteen-sixteenths __________
17. seventeen-eighteenths __________
18. twelve-nineteenths __________
19. five-elevenths __________
20. thirteen-seventeenths __________

UNIT VI

FRACTIONS

ACTIVITY SHEET 7--WORD FORMS

Directions: Using the spelling list provided write the word form for the following:

- half
- thirds
- fourths
- fifths
- sixths
- sevenths
- eights
- ninths
- tenths
- elevenths
- twelfths
- thirteenths
- fourteenths
- fifteenths
- sixteenths
- seventeenths
- eighteenths
- nineteenths
- twentieths

1. $\frac{2}{4}$ ______________________________

2. $\frac{3}{5}$ ______________________________

3. $\frac{4}{10}$ ______________________________

4. $\frac{6}{9}$ ______________________________

5. $\frac{3}{12}$ ______________________________

6. $\frac{9}{15}$ ______________________________

7. $\frac{8}{12}$ ______________________________

8. $\frac{6}{18}$ ______________________________

9. $\frac{3}{8}$ ______________________________

10. $\frac{10}{14}$ ______________________________

11. $\frac{2}{3}$ ______________________________

12. $\frac{1}{2}$ ______________________________

13. $\frac{4}{5}$ ______________________________

14. $\frac{11}{13}$ ______________________________

15. $\frac{3}{7}$ ____________________

16. $\frac{1}{6}$ ____________________

17. $\frac{7}{12}$ ____________________

18. $\frac{5}{16}$ ____________________

19. $\frac{11}{12}$ ____________________

20. $\frac{9}{11}$ ____________________

UNIT VI

FRACTIONS

INFORMATION SHEET 3--WORKING WITH FRACTIONS

I. What Is a Proper Fraction?

A. Any fraction in which the numerator is less than the denominator is called a proper fraction.

B. Examples of proper fractions are 5/8, 7/10, 1/8, 24/25.

II. What Is an Improper Fraction?

A. Any fraction in which the numerator is larger than the denominator is called an improper fraction.

B. Examples of improper fractions are 8/7, 9/6, 6/1, 3/2.

III. You Can Change Improper Fractions to Mixed Numbers.

A. A mixed number is made up of two parts.

1. a whole number

2. a fraction

EXAMPLE: 2 1/2 is a mixed number.

B. The line between the numerator and the denominator of a fraction means divide.

C. The fraction 5/3 means the same thing as 5 ÷ 3.

D. You can change an improper fraction to a mixed number by dividing.

1. Divide the numerator by the denominator: 5/3 = 5 ÷ 3 = 1, r=2.

2. Place the remainder over the number you divided by (the denominator) since the remainder is still to be divided: 5/3 = 5 ÷ 3 = 1 2/3.

IV. You Can Change Mixed Numbers to Improper Fractions

A. To change mixed numbers back to improper fractions, you must multiply.

EXAMPLE: 2 1/4 = ?

1. Multiply the denominator times the whole number: 4 x 2 = 8.

2. Add the numerator to your answer: 8 + 1 = 9.

3. Place your answer over the denominator: 9/4.

B. This will be used when you start working problems with fractions.

V. Reducing Fractions

A. Most fractions are reduced to the lowest terms:

EXAMPLE: 4/8 is the same as 1/2

B. To reduce fractions to the lowest terms, divide both the numerator and the denominator by the same number.

C. The number must divide evenly.

EXAMPLE: To reduce 3/6 to lowest terms, divide both the numerator and denominator by 3:

$$3/6 = \frac{(3 \div 3)}{(6 \div 3)} = 1/2$$

D. You may sometimes reduce a fraction to lowest terms by dividing both the numerator and the denominator by the numerator.

EXAMPLE: $$3/9 = \frac{(3 \div 3)}{(9 \div 3)} = 1/3$$

E. There will be times when the numerator and denominator cannot be divided evenly by the numerator. Try to find a smaller number that will divide evenly into both the numerator and the denominator.

EXAMPLE: $$6/8 = \frac{(6 \div 2)}{(8 \div 2)} = 3/4$$

In this case, both the numerator and the denominator can be divided by 2.

VI. Equivalent Fractions--To find an equivalent fraction for a given fraction, multiply the numerator and the denominator by the same number.

EXAMPLE: 1/5 = 2/10 How: 1/5 x 2/2 = 2/10

PROPER FRACTIONS

$\frac{1}{3}$ $\frac{2}{7}$ $\frac{4}{8}$

$\frac{3}{12}$ $\frac{2}{5}$ $\frac{3}{4}$

$\frac{5}{6}$ $\frac{1}{9}$ $\frac{4}{10}$

Any fraction in which the numerator is less than the denominator

IMPROPER FRACTIONS

$^{9}/_{7}$ $^{7}/_{4}$ $^{9}/_{4}$

$^{4}/_{3}$ $^{33}/_{4}$ $^{6}/_{3}$

$^{10}/_{8}$ $^{5}/_{3}$ $^{25}/_{20}$

Any fraction in which the numerator is larger than the denominator.

IMPROPER FRACTIONS TO MIXED NUMBERS

Step 1: Divide the numerator by the denominator

$$5/3 = 5 \div 3 = 1, {}_{r}2$$

Step 2- Place your remainder over the number you divided by (the denominator) since the remainder is still to be divided:

$$5/3 = 5 \div 3 = 1\,2/3$$

MIXED NUMBERS TO IMPROPER FRACTIONS

STEP 1: Multiply the denominator times the whole number:

$$2\frac{1}{4} = 4 \times 2 = 8$$

STEP 2: Add the numerator to your answer:

$$8 + 1 = 9$$

STEP 3: Place your answer over the denominator:

$$\frac{9}{4}$$

UNIT VI

FRACTIONS

ACTIVITY SHEET 8--IDENTIFYING PROPER FRACTIONS

Directions: Circle the proper fractions within each group of fractions.

1. $\frac{10}{7}$, $\frac{1}{2}$, $\frac{2}{3}$
2. $\frac{3}{4}$, $\frac{2}{5}$, $\frac{7}{2}$
3. $\frac{1}{5}$, $\frac{3}{1}$, $\frac{3}{8}$
4. $\frac{8}{7}$, $\frac{5}{7}$, $\frac{1}{5}$
5. $\frac{7}{8}$, $\frac{2}{3}$, $\frac{4}{3}$
6. $\frac{16}{11}$, $\frac{10}{11}$, $\frac{1}{7}$
7. $\frac{3}{5}$, $\frac{1}{16}$, $\frac{9}{7}$
8. $\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{2}$
9. $\frac{6}{3}$, $\frac{3}{5}$, $\frac{1}{8}$
10. $\frac{3}{2}$, $\frac{2}{3}$, $\frac{7}{5}$
11. $\frac{8}{5}$, $\frac{1}{9}$, $\frac{3}{7}$
12. $\frac{1}{6}$, $\frac{3}{4}$, $\frac{4}{7}$
13. $\frac{5}{8}$, $\frac{8}{5}$, $\frac{3}{10}$
14. $\frac{4}{9}$, $\frac{1}{5}$, $\frac{3}{2}$
15. $\frac{7}{6}$, $\frac{5}{4}$, $\frac{3}{1}$
16. $\frac{2}{3}$, $\frac{3}{8}$, $\frac{8}{7}$
17. $\frac{6}{7}$, $\frac{6}{5}$, $\frac{6}{11}$
18. $\frac{7}{15}$, $\frac{5}{13}$, $\frac{3}{10}$
19. $\frac{2}{5}$, $\frac{7}{9}$, $\frac{3}{5}$
20. $\frac{8}{9}$, $\frac{6}{7}$, $\frac{5}{6}$

ACTIVITY

UNIT VI

FRACTIONS

ACTIVITY SHEET 9--IDENTIFYING IMPROPER FRACTIONS

Directions: Circle the improper fraction(s) within each group of fractions.

1. $\frac{3}{4}$, $\frac{9}{7}$, $\frac{1}{9}$
2. $\frac{7}{8}$, $\frac{1}{3}$, $\frac{7}{5}$
3. $\frac{1}{5}$, $\frac{3}{4}$, $\frac{5}{3}$
4. $\frac{2}{3}$, $\frac{16}{11}$, $\frac{13}{10}$
5. $\frac{4}{3}$, $\frac{8}{5}$, $\frac{7}{9}$
6. $\frac{3}{8}$, $\frac{2}{5}$, $\frac{10}{9}$
7. $\frac{5}{7}$, $\frac{7}{5}$, $\frac{16}{9}$
8. $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{5}$
9. $\frac{4}{7}$, $\frac{5}{2}$, $\frac{1}{3}$
10. $\frac{1}{6}$, $\frac{6}{1}$, $\frac{7}{9}$
11. $\frac{3}{5}$, $\frac{5}{3}$, $\frac{2}{7}$
12. $\frac{1}{7}$, $\frac{7}{16}$ $\frac{10}{7}$
13. $\frac{5}{8}$, $\frac{5}{3}$, $\frac{5}{2}$
14. $\frac{5}{6}$, $\frac{2}{5}$, $\frac{9}{8}$
15. $\frac{7}{6}$, $\frac{11}{7}$, $\frac{11}{16}$
16. $\frac{2}{9}$, $\frac{4}{3}$, $\frac{1}{8}$
17. $\frac{7}{3}$, $\frac{3}{1}$, $\frac{14}{11}$
18. $\frac{1}{9}$, $\frac{3}{7}$, $\frac{7}{3}$
19. $\frac{2}{5}$, $\frac{8}{1}$, $\frac{7}{5}$
20. $\frac{8}{3}$, $\frac{4}{3}$, $\frac{1}{9}$

ACTIVITY

UNIT VI

FRACTIONS

ACTIVITY SHEET 10--CHANGING IMPROPER FRACTIONS TO MIXED NUMBERS

Directions: Change the improper fractions listed below to mixed numbers.

EXAMPLE: Sometimes we have a fraction whose numerator is greater than the denominator, like $\frac{4}{3}$. We call these improper fractions. Now there is no number that will divide both 4 and 3 so it is in its lowest terms. But we can make this fraction into a mixed number. We know that $\frac{3}{3}$ is one and we could write $\frac{4}{3}$ as $(\frac{3}{3} + \frac{1}{3})$ which is equal to $(1 + \frac{1}{3})$ which is equal to $1\frac{1}{3}$.

Another way to change to mixed numbers is to divide $\frac{4}{3}$. Four thirds is the same as four divided by three. So we could write $\frac{4}{3}$ as $3\overline{)4}$ and $3\overline{)4}$ = 1 with a remainder of 1. Since one divided by three is the same as $\frac{1}{3}$, we can write our answer as $1\frac{1}{3}$.

ACTIVITY

1. $\frac{17}{8} =$
2. $\frac{11}{7} =$
3. $\frac{5}{3}$
4. $\frac{4}{3} =$
5. $\frac{5}{2} =$
6. $\frac{7}{6} =$
7. $\frac{3}{2} =$
8. $\frac{9}{5} =$
9. $\frac{7}{4} =$
10. $\frac{8}{7}$

7. $6\frac{1}{8}$ = ______

8. $2\frac{1}{10}$ = ______

9. $8\frac{2}{3}$ = ______

10. $12\frac{3}{4}$ = ______

UNIT VI

FRACTIONS

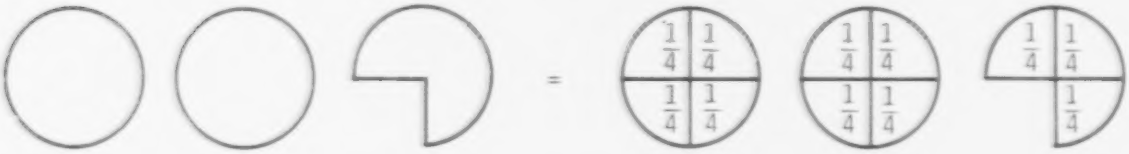
ACTIVITY SHEET 11--CHANGING MIXED NUMBERS TO IMPROPER FRACTIONS

To change a mixed number to an improper fraction, we multiply the whole number by the denominator of the fraction and add the numerator of the fraction to this product. Then write the sum over the denominator of the fraction.

EXAMPLE 1: Change $2\frac{3}{4}$ to an improper fraction.

Briefly: $2\frac{3}{4} = \frac{11}{4}$

or $2\frac{3}{4} = 2 + \frac{3}{4} = \frac{8}{4} + \frac{3}{4} = \frac{11}{4}$



EXAMPLE 2: Change $2\frac{3}{4}$ to an improper fraction

$2\frac{3}{4} = \frac{11}{4}$

Multiply these together first.

a. Multiply the whole number (2) by the denominator (4). 2 x 4 = 8 ← product

b. Then add the numerator of the fraction to the product (8). 3 + 8 = 11

c. The number 11 is the numerator of the improper fraction and it is placed over the denominator of the fractional part of the original mixed numeral.

$\frac{11}{4}$ ← original denominator

Directions: Change the mixed numbers below to improper fractions.

1. $3\frac{1}{4}$ = ________

2. $7\frac{1}{2}$ = ________

3. $6\frac{3}{5}$ = ________

4. $9\frac{1}{4}$ = ________

5. $1\frac{5}{8}$ = ________

6. $4\frac{7}{9}$ = ________

UNIT VI

FRACTIONS

ACTIVITY SHEET 12--CHANGING MIXED NUMBERS TO IMPROPER FRACTIONS

Directions: Change the following mixed numbers to improper fractions.

EXAMPLE: $3\frac{7}{8}$

a. Multiply the demoninator times the whole number $8 \times 3 = 24$

b. Add the numerator to your answer $24 + 7 = 31$

c. Place your answer over the denominator $\frac{31}{8}$

1. $2\frac{1}{4}$
2. $3\frac{1}{8}$
3. $2\frac{2}{5}$
4. $4\frac{3}{8}$
5. $5\frac{1}{4}$
6. $3\frac{2}{5}$
7. $4\frac{1}{3}$
8. $7\frac{2}{3}$
9. $1\frac{1}{2}$
10. $2\frac{3}{4}$

ACTIVITY

UNIT VI

FRACTIONS

ACTIVITY SHEET 13--REDUCING FRACTIONS

Directions: Reduce the following fractions to their lowest terms.

EXAMPLE: $\frac{8}{12} = \underline{\frac{2}{3}}$ How: $\frac{8 \div 4}{12 \div 4} = \frac{2}{3}$

1. $\frac{6}{8}$ = ________
2. $\frac{4}{12}$ = ________
3. $\frac{5}{15}$ = ________
4. $\frac{7}{21}$ = ________
5. $\frac{3}{12}$ = ________
6. $\frac{2}{8}$ = ________
7. $\frac{6}{12}$ = ________
8. $\frac{7}{14}$ = ________
9. $\frac{3}{48}$ = ________
10. $\frac{6}{24}$ = ________
11. $\frac{6}{18}$ = ________
12. $\frac{5}{35}$ = ________
13. $\frac{9}{72}$ = ________
14. $\frac{15}{30}$ = ________
15. $\frac{8}{32}$ = ________
16. $\frac{4}{8}$ = ________
17. $\frac{7}{56}$ = ________
18. $\frac{3}{18}$ = ________
19. $\frac{8}{16}$ = ________
20. $\frac{5}{10}$ = ________

UNIT VI

FRACTIONS

ACTIVITY SHEET 14--EQUIVALENT FRACTION

Directions: Name one equivalent fraction for each of the following fractions. To find an equivalent fraction for a given fraction, multiply the numerator and the denominator of the given fraction by the same number.

EXAMPLE: $\frac{1}{5} = \frac{2}{10}$ How: $\frac{1 \times 2}{5 \times 2} = \frac{2}{10}$

1. $\frac{1}{3}$ = ________
2. $\frac{1}{10}$ = ________
3. $\frac{2}{7}$ = ________
4. $\frac{7}{10}$ = ________
5. $\frac{3}{5}$ = ________
6. $\frac{1}{8}$ = ________
7. $\frac{5}{12}$ = ________
8. $\frac{8}{9}$ = ________
9. $\frac{5}{6}$ = ________
10. $\frac{1}{4}$ = ________
11. $\frac{3}{4}$ = ________
12. $\frac{1}{6}$ = ________
13. $\frac{2}{3}$ = ________
14. $\frac{3}{8}$ = ________
15. $\frac{3}{10}$ = ________
16. $\frac{2}{11}$ = ________
17. $\frac{7}{12}$ = ________
18. $\frac{4}{7}$ = ________
19. $\frac{5}{9}$ = ________
20. $\frac{4}{7}$ = ________

ACTIVITY

UNIT VI

FRACTIONS

INFORMATION SHEET 4--ADDING FRACTIONS

I. Adding Fractions

A. When adding fractions with like denominators, add only the numerators. The denominators stay the same.

EXAMPLE: $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$

B. In fractions that have unlike denominators, you must give them all the same denominator.

1. This is called a common denominator.

2. A common denominator is one that can be divided evenly by the several denominators of the fractions to be added.

3. It is not always easy to find which number is the common denominator.

4. A common denominator can be found by multiplying together all the denominators of all the fractions.

EXAMPLE: $\frac{1}{2}, \frac{1}{3}, \frac{1}{5}$ (2 x 3 x 5 = 30) Common demoninator is 30.

II. The Sum of Fractions May Equal One

A. A fraction that has the same numerator and denominator always equals the whole number.

EXAMPLE: $\frac{3}{3}$ of a pie equals 1 whole pie.

B. Change your answer to 1 when the numerator and denominator are the same.

III. Adding Mixed Numbers

A. If you have learned to add whole numbers and learned to add fractions, you can add mixed numbers.

B. You first add the fraction.

EXAMPLE: $2\frac{1}{4} + 3\frac{3}{4} = \frac{1}{4} + \frac{3}{4}$ or 1

C. You then add the whole number.

EXAMPLE: $2\frac{1}{4} + 3\frac{3}{4} = \quad \frac{1}{4} + \frac{3}{4} = \frac{4}{4}$ or 1

$$2 + 3 = \begin{array}{c}5\\ \hline 6\end{array}$$

INFORMATION

D. Remember that it may be necessary to find the common denominator when adding mixed numbers.

E. Remember also that you will need to change improper fractions to mixed numbers if your sum equals an improper fraction.

ADDING FRACTIONS

When you add fractions with like denominators:

$$2/5 + 1/5 = 3/5$$

Add only the numerators

the denominators stay the same

ADDING WITH UNLIKE DENOMINATORS

A. Give all fractions a common denominator

B. A common denominator is one that can be divided evenly by the several denominators of the fraction

C. A common denominator can be found by multiplying together all the denominators of all the fractions

$$\frac{1}{2}, \frac{1}{3}, \frac{1}{5}, \text{ is } 30$$

$$(2 \times 3 \times 5 = 30)$$

$$\frac{15}{30}, \frac{10}{30}, \frac{6}{30}$$

ADDING MIXED NUMBERS

$$2\frac{1}{5} + 3\frac{2}{5}$$

STEP 1: Add the fraction

$$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$$

STEP 2: Add the whole number

$$2 + 3 = 5$$

STEP 3: Add your two answers together

$$\begin{array}{r} 5 \\ + \; \frac{3}{5} \\ \hline \end{array}$$

UNIT VI

FRACTIONS

ACTIVITY SHEET 15--ADDING FRACTIONS WITH LIKE DENOMINATORS

When we were adding numbers, we were told that we must always add like things. This rule holds true for adding fractions. Remember in the fraction $\frac{3}{8}$ the bottom number or the denominator tells us what we are using. In this case it is eighths. The top number or numerator tells us how many parts of the eights we are using. In this case three.

Adding fractions is just like adding numbers. Let's say we want to add $\frac{3}{8} + \frac{4}{8}$.

If we write out the denominator, it would look like this:

3 eighths
$\underline{\text{4 eighths}}$
7 eighths and if we write the problem in numbers: $\frac{3}{8} + \frac{4}{8} = \frac{7}{8}$.

Notice our denominator did not change. We started with eighths and our answer is eighths.

Our problem would then be like this: add; $\frac{3}{8} + \frac{4}{8} = \frac{3 + 4}{8} = \frac{7}{8}$

Now try adding these:

1. $\frac{1}{4} + \frac{2}{4} =$ ________
2. $\frac{7}{16} + \frac{8}{16} =$ ________
3. $\frac{6}{12} + \frac{5}{12} =$ ________
4. $\frac{2}{8} + \frac{3}{8} =$ ________
5. $\frac{1}{3} + \frac{1}{3} =$ ________
6. $\frac{2}{4} + \frac{0}{4} =$ ________
7. $\frac{5}{8} + \frac{1}{8} =$ ________
8. $\frac{5}{24} + \frac{4}{24} =$ ________
9. $\frac{3}{16} + \frac{1}{16} =$ ________
10. $\frac{3}{7} + \frac{3}{7} =$ ________
11. $\frac{3}{12} + \frac{8}{12} =$ ________
12. $\frac{3}{8} + \frac{2}{8} =$ ________
13. $\frac{4}{8} + \frac{3}{8} =$ ________
14. $\frac{2}{4} + \frac{1}{4} =$ ________

ACTIVITY

15. $\frac{9}{16} + \frac{4}{16} =$ __________

16. $\frac{1}{2} + \frac{1}{2} =$ __________

17. $\frac{3}{32} + \frac{10}{32} =$ __________

18. $\frac{22}{64} + \frac{21}{64} =$ __________

19. $\frac{5}{8} + \frac{2}{8} =$ __________

20. $\frac{3}{16} + \frac{6}{16} =$ __________

UNIT VI

FRACTIONS

ACTIVITY SHEET 16--ADDING FRACTIONS WITH UNLIKE DENOMINATORS

A. To add fractions with unlike denominators, we express the given fractions as equivalent fractions having a common denominator, and add as we do with fractions having like denominators.

EXAMPLE: Notice that the lowest common demoninator of the fractions $\frac{1}{3}$ and $\frac{3}{4}$ is 12. One method of finding the lowest common denominator of the fractions is as follows:

a. Notice that 4 is the larger denominator.

b. Ask yourself, will 3 divide into 4 without a remainder?

$$\begin{array}{l} \quad 1 \;\; r=1 \\ 3\overline{)4\qquad} \\ \quad \underline{3} \\ \quad 1 \end{array}$$

The answer is no.

c. We then multiply 4 x 2 and get 8. We ask, will 3 divide into 8? The answer is no.

d. We then multiply 4 x 3 and get 12. Will 3 divide into 12 without a remainder? The answer is yes, because 12 ÷ 3 = 4. So 12 is the lowest common denominator of the fractions $\frac{3}{4}$ and $\frac{1}{3}$.

ACTIVITY

Add the following fractions, reducing all answers to lowest terms.

1. $\begin{array}{r} \frac{1}{2} \\ +\ \frac{3}{4} \\ \hline \end{array}$

2. $\begin{array}{r} \frac{2}{3} \\ +\ \frac{1}{4} \\ \hline \end{array}$

3. $\begin{array}{r} \frac{2}{5} \\ +\ \frac{1}{2} \\ \hline \end{array}$

4. $\begin{array}{r} \frac{5}{6} \\ +\ \frac{1}{3} \\ \hline \end{array}$

5. $\begin{array}{r} \frac{3}{8} \\ +\ \frac{2}{3} \\ \hline \end{array}$

6. $\begin{array}{r} \frac{3}{5} \\ +\ \frac{1}{6} \\ \hline \end{array}$

7. $\begin{array}{r} \frac{9}{10} \\ +\ \frac{1}{2} \\ \hline \end{array}$

8. $\begin{array}{r} \frac{1}{12} \\ +\ \frac{3}{4} \\ \hline \end{array}$

B. If there are 3 fractions in the problem, finding the lowest common denominator can be done as follows:

a. Notice that 5 is the largest denominator.

b. Ask yourself, "will 2 and 4 divide into 5?" The answer is no.

c. Then mulitply 5 x 2 and get 10. Ask, "will 2 and 4 divide into 10?" The answer is no.

d. Then multiply 5 x 3 and get 15. "Will 2 and 4 divide into 15? The answer is no.

e. Then muliptly 5 x 4 and get 20. Will 2 and 4 divide into 20? The answer is yes, so 20 is the lowest common denominator of the fractions $\frac{3}{4}$, $\frac{1}{2}$, and $\frac{3}{5}$.

$$\begin{array}{rcl} \frac{3}{4} & = & \frac{15}{20} \\ \frac{1}{2} & = & \frac{10}{20} \\ +\ \frac{3}{5} & = & \frac{12}{20} \\ \hline & & \frac{37}{20} = 1\frac{[illegible]}{20} \end{array}$$

Work the following problems, reducing answers to lowest terms.

1. $\begin{array}{r} \frac{1}{2} \\ \frac{2}{3} \\ +\ \frac{3}{4} \\ \hline \end{array}$

2. $\begin{array}{r} \frac{1}{3} \\ \frac{1}{4} \\ +\ \frac{3}{8} \\ \hline \end{array}$

3. $\begin{array}{r} \frac{2}{3} \\ \frac{1}{5} \\ +\ \frac{1}{2} \\ \hline \end{array}$

4. $\begin{array}{r} \frac{1}{2} \\ \frac{1}{4} \\ +\ \frac{1}{8} \\ \hline \end{array}$

5. $\begin{array}{r} \frac{3}{5} \\ \frac{1}{2} \\ +\ \frac{1}{10} \\ \hline \end{array}$

6. $\begin{array}{r} \frac{5}{6} \\ \frac{2}{3} \\ +\ \frac{1}{4} \\ \hline \end{array}$

7. $\begin{array}{r} \frac{2}{3} \\ \frac{1}{5} \\ +\ \frac{1}{4} \\ \hline \end{array}$

8. $\begin{array}{r} \frac{5}{8} \\ \frac{1}{2} \\ +\ \frac{1}{12} \\ \hline \end{array}$

UNIT VI

FRACTIONS

ACTIVITY SHEET 17--ADDING MIXED NUMBERS WITH UNLIKE DENOMINATORS

Directions: Add and reduce to lowest terms.

EXAMPLE # 1:
$$\begin{array}{rrcr} & 6\frac{2}{3} & = & 6\frac{8}{12} \\ & 3\frac{1}{4} & = & 3\frac{3}{12} \\ + & 4\frac{1}{2} & = & 4\frac{6}{12} \\ \hline & & & 13\frac{17}{12} = 13 + 1\frac{5}{12} = 14\frac{5}{12} \end{array}$$

EXAMPLE # 2:
$$\begin{array}{rrcr} & 3\frac{1}{4} & = & 3\frac{2}{8} \\ + & \frac{7}{8} & = & \frac{7}{8} \\ \hline & & & 3\frac{9}{8} = 3 + 1\frac{1}{8} = 4\frac{1}{8} \end{array}$$

1. $\begin{array}{rr} & 5\frac{1}{2} \\ + & 4\frac{1}{4} \\ \hline \end{array}$

2. $\begin{array}{rr} & 8\frac{1}{6} \\ + & 5\frac{1}{3} \\ \hline \end{array}$

3. $\begin{array}{rr} & 7\frac{3}{4} \\ + & 8\frac{1}{2} \\ \hline \end{array}$

4. $\begin{array}{rr} & 4\frac{3}{5} \\ & \frac{1}{2} \\ + & 3\frac{1}{10} \\ \hline \end{array}$

5. $\begin{array}{rr} & 2\frac{4}{5} \\ & \frac{1}{2} \\ + & 5\frac{9}{10} \\ \hline \end{array}$

ACTIVITY

6. $\begin{array}{rr} & 9\frac{1}{3} \\ & 3\frac{1}{4} \\ + & 2\frac{5}{6} \\ \hline \end{array}$

7. $\begin{array}{rr} & 5\frac{2}{3} \\ & 4\frac{3}{8} \\ + & 2\frac{1}{6} \end{array}$

8. $\begin{array}{rr} & 8\frac{3}{5} \\ + & 2\frac{3}{4} \\ \hline \end{array}$

9. $\begin{array}{rr} & 4\frac{1}{2} \\ + & \frac{7}{8} \\ \hline \end{array}$

10. $\begin{array}{rr} & 1\frac{1}{2} \\ & \frac{7}{12} \\ + & \frac{3}{4} \\ \hline \end{array}$

11. Maria worked $2\frac{3}{4}$ hours, $1\frac{3}{4}$ hours, and 5 hours overtime during one week. How many total hours overtime did she work that week? __________

12. In running the 440-yard relay race, Carl ran his distance in $12\frac{2}{5}$ seconds, Joe ran his distance in $13\frac{3}{5}$ seconds, Sam ran his distance in $12\frac{3}{5}$ seconds, and George ran his distance in $13\frac{2}{5}$ seconds. How long did it take the team to run the 440 yards? __________

UNIT VI

FRACTIONS

ACTIVITY SHEET 18--ADDING AND REDUCING

Directions: Add the following and reduce your answer to lowest terms.

Sometimes we get a fraction that should be reduced. We can reduce a fraction if there is a number that will divide into both the numerator and denominator of the fraction.

EXAMPLE: $\frac{6}{8} = \frac{6 \div 2}{8 \div 2} = \frac{3}{4}$

2 will divide into both 6 and 8

There is no number that will divide into both 3 and 4 evenly so our fraction has been reduced to lowest form.

1. $\frac{3}{8} + \frac{1}{8} =$ ________
2. $\frac{7}{12} + \frac{1}{12} =$ ________
3. $\frac{1}{4} + \frac{1}{4} =$ ________
4. $\frac{13}{32} + \frac{15}{32} =$ ________
5. $\frac{27}{64} + \frac{21}{64} =$ ________
6. $\frac{3}{8} + \frac{4}{8} + \frac{1}{8} =$ ________
7. $\frac{6}{14} + \frac{1}{14} =$ ________
8. $\frac{4}{8} + \frac{2}{8} =$ ________
9. $\frac{3}{24} + \frac{9}{24} =$ ________
10. $\frac{4}{32} + \frac{2}{32} =$ ________
11. $\frac{3}{15} + \frac{2}{15} =$ ________
12. $\frac{3}{18} + \frac{3}{18} =$ ________
13. $\frac{3}{4} + \frac{1}{4} =$ ________
14. $\frac{2}{8} + \frac{2}{8} =$ ________
15. $\frac{4}{10} + \frac{2}{10} =$ ________
16. $\frac{1}{35} + \frac{4}{35} =$ ________
17. $\frac{7}{32} + \frac{9}{32} =$ ________
18. $\frac{7}{16} + \frac{7}{16} =$ ________

ACTIVITY

UNIT VI

FRACTIONS

ACTIVITY SHEET 19--ADDING MIXED NUMBERS

Directions: Add the mixed numbers in the problems below.

Sometimes we need to add whole numbers with fractions attached to them. These kinds of fractions are called mixed numbers. We add them like this:

$$\begin{array}{r} 12\frac{1}{4} \\ +\ 15\frac{2}{4} \\ \hline 27\frac{3}{4} \end{array}$$

Add the fractions, then add the whole numbers and our answer is $27\frac{3}{4}$.

1. $\begin{array}{r} 4\frac{1}{8} \\ +\ 2\frac{6}{8} \\ \hline \end{array}$

2. $\begin{array}{r} 2\frac{3}{12} \\ +\ 4\frac{4}{12} \\ \hline \end{array}$

3. $\begin{array}{r} 12\frac{1}{4} \\ +\ 15\frac{2}{4} \\ \hline \end{array}$

4. $\begin{array}{r} 26\frac{3}{12} \\ +\ 15\frac{8}{12} \\ \hline \end{array}$

5. $\begin{array}{r} 3\frac{1}{3} \\ +\ 4\frac{1}{3} \\ \hline \end{array}$

6. $\begin{array}{r} 4\frac{2}{12} \\ +\ 8\frac{3}{12} \\ \hline \end{array}$

7. $\begin{array}{r} 9\frac{1}{4} \\ +\ 6\frac{2}{4} \\ \hline \end{array}$

8. $\begin{array}{r} 8\frac{1}{6} \\ +\ 2\frac{4}{6} \\ \hline \end{array}$

9. $\begin{array}{r} 3\frac{3}{8} \\ +\ 1\frac{2}{8} \\ \hline \end{array}$

10. $\begin{array}{r} 6\frac{8}{16} \\ +\ 3\frac{5}{16} \\ \hline \end{array}$

11. $\begin{array}{r} 3\frac{3}{32} \\ +\ 7\frac{6}{32} \\ \hline \end{array}$

12. $\begin{array}{r} 2\frac{10}{64} \\ +\ 4\frac{13}{64} \\ \hline \end{array}$

ACTIVITY

UNIT VI

FRACTIONS

INFORMATION SHEET 5--SUBTRACTING FRACTIONS

I. Subtracting Fractions

A. When you have like denominators, you subtract only the numerator; the denominators stay the same.

B. When you have unlike denominators, you must find the common denominator as you did in addition.

II. Subtracting Fractions from Whole Numbers

A. To subtract from a whole number, you must change the whole number to a fraction.

B. Decide what denominator you are working with.

EXAMPLE: $1 - \frac{3}{4} =$

Change the 1 to $\frac{4}{4}$

This fractions is equal to 1 because the numerator and denominator are the same.

III. Subtracting Fractions From Whole Numbers When You Have to "Borrow"

A. In order to subtract a fraction from a whole number that is larger than one, you will need to "borrow."

EXAMPLE:

$$\begin{array}{rcr} 5 & = & 4\frac{4}{4} \\ -\frac{3}{4} & = & -\frac{3}{4} \\ \hline & & 4\frac{1}{4} \end{array}$$

B. "Borrow" 1 from the 5.

C. Change it to a fraction (Check to see with what denominator you are working.

D. You now subtract.

IV. Subtracting Mixed Numbers

A. When subtracting mixed numbers, the fraction and whole number parts are subtracted separately.

B. First subtract the fraction.

C. Next, subtract the whole number.

EXAMPLE: $5\frac{3}{4} - 3\frac{1}{4} =$ $\frac{3}{4} - \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$

$5 - 3 = 2$

$2\frac{1}{2}$

V. Subtracting Mixed Numbers When You Have to "Borrow"

A. If the fraction part of a mixed number problem cannot be subtracted, "borrow" 1 from the whole number.

B. Change the 1 to a fraction.

C. Add the fraction to the fraction column and then subtract.

EXAMPLE: $6\frac{1}{5} - 4\frac{3}{5} = 1\frac{2}{5}$

1. You cannot subtract $\frac{3}{5}$ from $\frac{1}{5}$
2. Borrow 1 from the 6. Change the 1 to $\frac{5}{5}$
3. Add $\frac{5}{5} + \frac{1}{5} = \frac{6}{5}$
4. Subtract the fractions: $\frac{5}{5} - \frac{3}{5} = \frac{2}{5}$
5. Subtract the whole number: 5 - 4 = 1.

EXAMPLE: $6\frac{1}{5} - 4\frac{3}{5} = 1\frac{2}{5}$

SUBTRACTING FRACTIONS

When you subtract fractions
with like denominators

$${}^{7}/_{8} - {}^{3}/_{8} = {}^{4}/_{8} = {}^{1}/_{2}$$

Subtract only
the numerators

the denominators
stay the same

(until you reduce your fraction)

SUBTRACTING FRACTIONS WITH UNLIKE DENOMINATORS

Change denominators
to common denominators
as you did with addition

Subtract only the numerator

The denominator stays the same

$$^2/_3 - {}^1/_4 =$$

$$^8/_{12} - {}^3/_{12} = {}^5/_{12}$$

SUBTRACTING FROM WHOLE NUMBERS

Step 1: Change the whole number to a fraction.

$$2 - \frac{1}{2}$$

Step 2: Decide what denominator you are working with.

$$2 - \frac{1}{\textcircled{2}} =$$

$$1\frac{2}{2} - \frac{1}{2} =$$

Step 3: Subtract

$$1\frac{2}{2} - \frac{1}{2} = 1\frac{1}{2}$$

SUBTRACTING MIXED NUMBERS

A. The fraction and the whole number are subtracted separately

$$4\tfrac{1}{4} - 3\tfrac{3}{4}$$

B. Subtract the fraction

$$\tfrac{3}{4} - \tfrac{1}{4} = \tfrac{2}{4} \text{ or } \tfrac{1}{2}$$

C. Subtract the whole numbers

$$4 - 3 = 1$$

D. Put your answers

$$\left.\begin{array}{r} \tfrac{3}{4} - \tfrac{1}{4} = \tfrac{2}{4} \text{ or } \tfrac{1}{2} \\ 4 - 3 = 1 \end{array}\right\} 1\tfrac{1}{2}$$

UNIT VI

FRACTIONS

ACTIVITY SHEET 20--SUBTRACTING FRACTIONS WITH LIKE DENOMINATORS

When subtracting numbers, we must always subtract like things. Remember, in the fraction $\frac{5}{6}$, the bottom number or the denominator tells us what we are using. In this case, we are using sixths. The top number or numerator tells us how many parts of the sixths we are using, in this case five.

Subtracting fractions is like subtracting numbers. Let's say we want to subtract $\frac{5}{6} - \frac{3}{6}$. If we write out the denominator, it would look like this:

$$\begin{array}{r} 5 \text{ sixths} \\ - 3 \text{ sixths} \\ \hline 2 \text{ sixths} \end{array}$$

and if we write the problem in numbers: $\frac{5}{6} - \frac{3}{6} = \frac{2}{6}$.

Notice our denominator did not change. We started with sixths and our answer is sixths.

Our problem would be like this: Subtract: $\frac{5}{6} - \frac{3}{6} = \overset{\text{(think)}}{\frac{5 - 3}{6}} = \frac{2}{6}$

Subtract the following fractions and reduce the answer.

1. $\frac{7}{8} - \frac{2}{8} =$ ______
2. $\frac{3}{4} - \frac{1}{4} =$ ______
3. $\frac{2}{3} - \frac{1}{3} =$ ______
4. $\frac{7}{16} - \frac{1}{16} =$ ______
5. $\frac{7}{8} - \frac{6}{8} =$ ______
6. $\frac{7}{12} - \frac{1}{12} =$ ______
7. $\frac{14}{32} - \frac{7}{32} =$ ______
8. $\frac{3}{4} - \frac{2}{4} =$ ______
9. $\frac{5}{8} - \frac{3}{8} =$ ______
10. $\frac{8}{9} - \frac{2}{9} =$ ______
11. $\frac{13}{16} - \frac{3}{16} =$ ______
12. $\frac{8}{8} - \frac{1}{8} =$ ______
13. $\frac{5}{7} - \frac{2}{7} =$ ______
14. $\frac{7}{11} - \frac{3}{11} =$ ______
15. $\frac{9}{16} - \frac{3}{16} =$ ______

ACTIVITY

FRACTIONS

ACTIVITY SHEET 21--SUBTRACTING FRACTIONS WITH UNLIKE DENOMINATORS

To subtract fractions with unlike denominators, we express the fractions as equivalent fractions having a common denominator and subtract as we do with like denominators.

EXAMPLE # 1:

$$\begin{array}{rcl} \frac{2}{3} & = & \frac{4}{6} \\ -\ \frac{1}{2} & = & \frac{3}{6} \\ \hline & & \frac{1}{6} \end{array}$$

EXAMPLE # 2:

$$\begin{array}{rcl} 8\ \frac{5}{8} & = & 8\ \frac{15}{24} \\ -\ 3\ \frac{1}{4} & = & 3\ \frac{6}{24} \\ \hline & & 5\ \frac{9}{24} = 5\ \frac{3}{8} \end{array}$$

Subtract the following fractions, then reduce all answers to lowest terms.

1. $\frac{3}{4} - \frac{1}{3}$

2. $6\frac{4}{5} - 3\frac{2}{3}$

3. $12\frac{5}{6} - 10\frac{3}{5}$

4. $17\frac{5}{9} - 3\frac{1}{3}$

5. $9\frac{5}{7} - 5\frac{1}{3}$

6. $\frac{11}{12} - \frac{3}{8}$

7. $64\frac{7}{8} - 39\frac{3}{4}$

8. $8\frac{11}{15} - 5\frac{7}{10}$

9. $124\frac{5}{6} - 63\frac{5}{9}$

10. $83\frac{7}{8} - 36\frac{3}{4}$

ACTIVITY

FRACTIONS

ACTIVITY SHEET 22--SUBTRACTING FRACTIONS FROM WHOLE NUMBERS

Directions: Subtract the fraction from the whole number; change the whole number to a fraction before subtracting.

1. $3 - \frac{1}{3} =$
2. $2 - \frac{1}{4} =$
3. $4 - \frac{2}{5} =$
4. $2 - \frac{7}{8} =$
5. $4 - \frac{1}{5} =$
6. $3 - \frac{1}{6} =$
7. $2 - \frac{5}{8} =$
8. $4 - \frac{3}{5} =$
9. $6 - \frac{7}{8} =$
10. $7 - \frac{1}{8} =$
11. $5 - \frac{1}{2}$
12. $8 - \frac{2}{3} =$
13. $7 - \frac{3}{8} =$
14. $8 - \frac{1}{9} =$
15. $3 - \frac{2}{5} =$
16. $5 - \frac{1}{9} =$
17. $6 - \frac{2}{7} =$
18. $8 - \frac{2}{7} =$
19. $9 - \frac{2}{3} =$
20. $5 - \frac{1}{4} =$

UNIT VI

FRACTIONS

ACTIVITY SHEET 23--SUBTRACTING MIXED FRACTIONS WITH UNLIKE DENOMINATORS

If the fraction in the subtrahend (bottom number) is greater than the fraction in the minuend (top number), we regroup by taking one (1) from the whole number in the minuend to increase the fractions in the minuend (top number), then we subtract.

EXAMPLE # 1:

$$\begin{array}{r} 5\frac{1}{2} = 5\frac{3}{6} = (4+1)+\frac{3}{6} = (4+\frac{6}{6})+\frac{3}{6} = 4+(\frac{6+3}{6+6}) = 4+\frac{9}{6} = 4\frac{9}{6} \\ -\ 3\frac{2}{3} = 3\frac{4}{6} = 3+\frac{4}{6} = 3+\frac{4}{6} = 3+\frac{4}{6} = 3+\frac{4}{6} = 3\frac{4}{6} \\ \hline 1\frac{5}{6} \end{array}$$

EXAMPLE # 2: (Short Method)

$$\begin{array}{r} 5\frac{1}{2} = 5\frac{3}{6} = 4\frac{9}{6} \\ -\ 3\frac{2}{3} = 3\frac{4}{6} = 3\frac{4}{6} \\ \hline 1\frac{5}{6} \end{array}$$

EXAMPLE # 3:

$$\begin{array}{r} 8 = (7+1) = 7+\frac{4}{4} = 7\frac{4}{4} \\ -\ 6\frac{3}{4} = 6\frac{3}{4} = 6+\frac{3}{4} = 6\frac{3}{4} \\ \hline 1\frac{1}{4} \end{array}$$

EXAMPLE # 4: (Short Method)

$$\begin{array}{r} 8 = 7\frac{4}{4} \\ -\ 6\frac{3}{4} = 6\frac{3}{4} \\ \hline 1\frac{1}{4} \end{array}$$

EXAMPLE # 5:

$$\begin{array}{r} 12\frac{3}{8} \\ -\ 7 \\ \hline 5\frac{3}{8} \end{array}$$

EXAMPLE # 6: (Short Method)

$$\begin{array}{r} 12\frac{3}{8} \\ -\ 7\frac{0}{8} \\ \hline 5\frac{3}{8} \end{array}$$

1. $\begin{array}{r} 4\frac{2}{5} \\ -\ 2\frac{3}{4} \\ \hline \end{array}$

2. $\begin{array}{r} 8 \\ -\ 4\frac{5}{6} \\ \hline \end{array}$

3. $\begin{array}{r} 6\frac{1}{3} \\ -\ 4\frac{2}{3} \\ \hline \end{array}$

4. $\begin{array}{r} 25\frac{3}{8} \\ -\ 12\frac{2}{3} \\ \hline \end{array}$

5. $\begin{array}{r} 18\frac{1}{3} \\ -\ 9\frac{1}{2} \\ \hline \end{array}$

6. $\begin{array}{r} 56\frac{1}{5} \\ -\ 17\frac{1}{3} \\ \hline \end{array}$

7. $\begin{array}{r} 37\frac{5}{8} \\ -\ 26 \\ \hline \end{array}$

8. $\begin{array}{r} 62\frac{1}{6} \\ -\ 19\frac{2}{3} \\ \hline \end{array}$

9. $\begin{array}{r} 85\frac{7}{10} \\ -\ 19\frac{4}{5} \\ \hline \end{array}$

10. $\begin{array}{r} 67\frac{3}{4} \\ -\ 18\frac{2}{3} \\ \hline \end{array}$

UNIT VI

FRACTIONS

ACTIVITY SHEET 24--SUBTRACTING MIXED NUMBERS

Directions: Read the examples carefully then work the problems below. Reduce answers to lowest terms.

In subtracting mixed numbers with fractions having the same denominator, we have two cases to investigate.

EXAMPLE 1:

$$\begin{array}{r} 12\frac{7}{8} \\ -\ 7\frac{4}{8} \\ \hline 5\frac{3}{8} \end{array}$$

EXAMPLE 2:

$$\begin{array}{rcr} 12\frac{4}{8} & = & 11\ \frac{12}{8} \\ -\ 7\frac{7}{8} & = & 7\ \frac{7}{8} \\ \hline & & 4\ \frac{5}{8} \end{array}$$

Notice: In Example 2 we had to take one from the twelve leaving eleven. The one we made in the form of $\frac{8}{8}$ and added this to the $\frac{4}{8}$ thus $\frac{8}{8} + \frac{4}{8} = \frac{12}{8}$. Do you see that $12\frac{4}{8}$ and $11\frac{12}{8}$ are the same number? Then we subtracted $\frac{7}{8}$ from $\frac{12}{8}$ and 7 from 11 to get our answer $4\frac{5}{8}$.

Examples:

$$\begin{array}{r} \frac{4}{5} \\ -\ \frac{1}{5} \\ \hline \frac{3}{5} \end{array} \qquad \begin{array}{r} \frac{11}{16} \\ -\ \frac{5}{16} \\ \hline \frac{6}{16} = \frac{3}{8} \end{array} \qquad \begin{array}{r} 7\frac{2}{3} \\ -\ 3\phantom{\frac{2}{3}} \\ \hline 4\frac{2}{3} \end{array} \qquad \begin{array}{rcr} 8 & = & 7\ \frac{16}{16} \\ -\ 1\ \frac{7}{16} & = & 1\ \frac{7}{16} \\ \hline & & 6\ \frac{9}{16} \end{array} \qquad \begin{array}{rcr} 6\ \frac{1}{8} & = & 5\ \frac{9}{8} \\ -\ \frac{7}{8} & & \frac{7}{8} \\ \hline & & 5\ \frac{2}{8} = 5\ \frac{1}{4} \end{array}$$

1. $\begin{array}{r} \frac{5}{8} \\ -\ \frac{1}{8} \\ \hline \end{array}$

2. $\begin{array}{r} \frac{4}{5} \\ -\ \frac{3}{5} \\ \hline \end{array}$

3. $\begin{array}{r} \frac{2}{3} \\ -\ \frac{1}{3} \\ \hline \end{array}$

4. $\begin{array}{r} 8\ \frac{13}{16} \\ -\ 5\ \frac{3}{16} \\ \hline \end{array}$

5. $\begin{array}{r} 4\ \frac{4}{5} \\ -\ 3\ \frac{2}{5} \\ \hline \end{array}$

6. $\begin{array}{r} 45\ \frac{1}{3} \\ -\ 32\ \frac{2}{3} \\ \hline \end{array}$

7. $\begin{array}{r} 12\ \frac{3}{8} \\ -\ 7\ \frac{7}{8} \\ \hline \end{array}$

8. $\begin{array}{l} 5\ \frac{15}{32} \\ -\ 3 \\ \hline \end{array}$

9. $\begin{array}{r} 6\phantom{\ \frac{3}{4}} \\ -\ 2\ \frac{3}{4} \\ \hline \end{array}$

10. $\begin{array}{r} 9 \\ -\ \frac{4}{5} \\ \hline \end{array}$

ACTIVITY

UNIT VI

FRACTIONS

INFORMATION SHEET 6--MULTIPLYING FRACTIONS

I. Multiplying Fractions

A. When you multiply fractions, you multiply both the numerators and the denominators.

EXAMPLE: $\frac{3}{4} \times \frac{2}{5} =$

1. Multiply the numerators: $3 \times 2 = 6$

2. Multiply the denominators: $4 \times 5 = 20$

3. Place the answer in the form of a fraction $\frac{6}{20}$

B. Sometimes the answer to a multiplication problem can be reduced.

1. Multiply the fraction: $\frac{3}{4} \times \frac{2}{5} = \frac{6}{20}$

2. Reduce the fraction: $\frac{6}{20} = \frac{3}{10}$

II. Multiplying by Whole Numbers

A. In multiplying by whole numbers, give the whole number a denominator of 1.

B. This does not change the value of the whole number.

EXAMPLE: $\frac{2}{3} \times 7 = \frac{2}{3} \times \frac{7}{1} = \frac{14}{3}$, or $4\frac{2}{3}$

III. Cancelling Out Fractions

A. Before you multiply, you can sometimes reduce fractions to lowest terms.

B. One way of reducing to lowest terms is called cancelling.

EXAMPL $\frac{1}{3} \times \frac{6}{7} = \frac{1}{\cancel{3}_1} \times \frac{\cancel{6}^2}{7} = \frac{1}{1} \times \frac{2}{7} = \frac{2}{7}$

1. Cancel with any number that can be divided into a numerator and a denominator.

2. In this case, 3 can be divided into the numerator 6: $6 \div 3 = 2$; and 3 can be divided into the denominator 3: $3 \div 3 = 1$

3. Multiply the cancelled problem $\frac{1}{1} \times \frac{2}{7} = \frac{2}{7}$

INFORMATION

IV. Multiplying with Mixed Numbers--change mixed numbers to improper fractions before multiplying.

EXAMPLE: $\frac{2}{5} \times 1\frac{1}{2} = \frac{2}{5} \times \frac{3}{2} = \frac{2}{5} \times \frac{3}{2} = \frac{6}{10} = \frac{3}{5}$

MULTIPLYING FRACTIONS

$$\frac{2}{5} \times \frac{3}{4} =$$

Multiply the numerators

$$2 \times 3 = 6$$

Multiply the denominators

$$5 \times 4 = 20$$

Place the answer in the form of a fraction

$$\frac{6}{20}$$

Reduce to lowest terms

$$\frac{3}{10}$$

FRACTIONS AND WHOLE NUMBERS

Give the whole
number a denominator
of "**1**"

$$2 \times \frac{1}{3} =$$

$$\frac{2}{1} \times \frac{1}{3} = \frac{2}{3}$$

CANCELLING FRACTIONS

Cancelling may be done with any number that can be divided into a numerator and a denominator

$$\frac{1}{3} \times \frac{6}{7} = \frac{1}{\underset{1}{\cancel{3}}} \times \frac{\overset{2}{\cancel{6}}}{7} =$$

$$\frac{1}{1} \times \frac{2}{7} = \frac{2}{7}$$

MULTIPLYING MIXED NUMBERS

First change the mixed number to an improper fraction:

$$\frac{2}{5} \times 1\frac{1}{2} =$$

$$\frac{2}{5} \times \frac{3}{2} = \frac{6}{10} = \frac{3}{5}$$

UNIT VI

FRACTIONS

ACTIVITY SHEET 25--MULTIPLICATION OF FRACTIONS

Directions: Multiply the problems below.

To multiply fractions, we multiply the top number times the top number and the bottom number times the bottom number. In other words, the numerators times the numerators and the denominators times the denominators.

EXAMPLE: $\frac{3}{4} \times \frac{7}{8} = \frac{3 \times 7}{4 \times 8} = \frac{21}{32}$

Multiply:

1. $\frac{1}{4} \times \frac{1}{2} =$ __________
2. $\frac{1}{8} \times \frac{1}{3} =$ __________
3. $\frac{1}{5} \times \frac{1}{4} =$ __________
4. $\frac{1}{2} \times \frac{1}{10} =$ __________
5. $\frac{1}{16} \times \frac{1}{4} =$ __________
6. $\frac{1}{2} \times \frac{3}{5} =$ __________
7. $\frac{5}{6} \times \frac{7}{8} =$ __________
8. $\frac{7}{16} \times \frac{3}{4} =$ __________
9. $\frac{9}{10} \times \frac{3}{8} =$ __________
10. $\frac{5}{12} \times \frac{1}{3} =$ __________
11. $\frac{1}{3} \times \frac{3}{5} =$ __________
12. $\frac{4}{5} \times \frac{3}{4} =$ __________
13. $\frac{3}{10} \times \frac{1}{3} =$ __________
14. $\frac{2}{3} \times \frac{1}{2} =$ __________
15. $\frac{5}{6} \times \frac{6}{7} =$ __________
16. $\frac{5}{6} \times \frac{3}{8} =$ __________
17. $\frac{6}{7} \times \frac{11}{12} =$ __________
18. $\frac{4}{5} \times \frac{7}{8} =$ __________

UNIT VI

FRACTIONS

ACTIVITY SHEET 26--MULTIPLICATION OF FRACTIONS

Directions: Work the following multiplication problems.

1. $\frac{2}{5} \times \frac{5}{12} =$ ________

2. $\frac{9}{10} \times \frac{2}{3} =$ ________

3. $\frac{5}{8} \times \frac{16}{25} =$ ________

4. $\frac{8}{9} \times \frac{3}{4} =$ ________

5. $\frac{4}{21} \times \frac{7}{8} =$ ________

6. $\frac{5}{6} \times \frac{4}{5} =$ ________

7. $\frac{3}{16} \times \frac{6}{7} =$ ________

8. $\frac{7}{8} \times \frac{12}{21} =$ ________

9. $\frac{10}{12} \times \frac{14}{15} =$ ________

10. $\frac{15}{16} \times \frac{9}{10} =$ ________

11. $\frac{7}{15} \times \frac{5}{28} =$ ________

12. $\frac{9}{14} \times \frac{7}{18} =$ ________

13. $\frac{2}{3} \times \frac{3}{4} =$ ________

14. $\frac{5}{12} \times \frac{2}{5} =$ ________

15. $\frac{11}{16} \times \frac{4}{5} =$ ________

16. $\frac{30}{75} \times \frac{15}{32} =$ ________

17. $\frac{2}{15} \times \frac{4}{21} \times \frac{7}{8} \times \frac{5}{6} =$ ________

18. $\frac{24}{27} \times \frac{18}{42} =$ ________

19. $\frac{5}{12} \times \frac{24}{25} \times \frac{5}{5} =$ ________

20. $\frac{4}{5} \times \frac{15}{20} \times \frac{7}{8} =$ ________

UNIT VI

FRACTIONS

ACTIVITY SHEET 27--MULTIPLYING WHOLE NUMBERS AND FRACTIONS

To multiply whole numbers and fractions, write the whole number as a fraction:

EXAMPLE: $6 \times \frac{1}{5} = \frac{6}{1} \times \frac{1}{5} = \frac{6 \times 1}{1 \times 5} = \frac{6}{5} = 1\,\frac{1}{5}$

To multiply mixed numbers we must first get them to an improper fraction, then multiply.

EXAMPLE: $\frac{7}{8} \times 3\,\frac{2}{5} = \frac{7}{8} \times \frac{17}{5} = \frac{7 \times 17}{8 \times 5} = \frac{111}{40}$

$$\frac{119}{40} = \begin{array}{rll} & 2 & \\ 40 & \overline{)119} & \frac{39}{40} \\ & \underline{80} & \\ & 39 & \text{remainder} \end{array} = 2\,\frac{39}{40}$$

Directions: Multiply the following and reduce all answers to lowest terms.

1. $\frac{5}{8} \times 6$ = __________
2. $\frac{3}{4} \times \frac{4}{5}$ = __________
3. $10 \times 5\,\frac{1}{2}$ = __________
4. $2\,\frac{1}{2} \times 2$ = __________
5. $9\,\frac{1}{3} \times 1\,\frac{7}{8}$ = __________
6. $1\,\frac{3}{4} \times 2\,\frac{1}{2} \times 3\,\frac{1}{7}$ = __________
7. $1\,\frac{1}{2} \times 4\,\frac{2}{3}$ = __________
8. $4\,\frac{1}{5} \times 6 \times \frac{5}{7}$ = __________
9. $2\,\frac{1}{3} \times 3\,\frac{1}{2}$ = __________
10. $5\,\frac{3}{5} \times \frac{7}{8}$ = __________

UNIT VI

FRACTIONS

ACTIVITY SHEET 28--MULTIPLYING WITH MIXED NUMBERS

Directions: Work the following problems; remember to change the mixed number to an improper fraction before multiplying.

1. $\frac{3}{4} \times 2\,\frac{1}{2} =$
2. $\frac{7}{8} \times 1\,\frac{3}{4} =$
3. $\frac{1}{3} \times 1\,\frac{2}{5} =$
4. $\frac{2}{5} \times 3\,\frac{7}{8} =$
5. $\frac{9}{10} \times 1\,\frac{3}{4} =$
6. $\frac{1}{8} \times 2\,\frac{1}{5} =$
7. $\frac{2}{3} \times 4\,\frac{2}{7} =$
8. $\frac{3}{8} \times 3\,\frac{5}{7} =$
9. $\frac{5}{8} \times 4\,\frac{1}{4} =$
10. $\frac{3}{4} \times 1\,\frac{7}{8} =$
11. $\frac{5}{7} \times 2\,\frac{1}{5} =$
12. $\frac{1}{3} \times 3\,\frac{1}{9} =$
13. $\frac{2}{5} \times 2\,\frac{1}{16} =$
14. $\frac{1}{3} \times 2\,\frac{1}{8}$
15. $\frac{2}{3} \times 4\,\frac{3}{4} =$

ACTIVITY

UNIT VI

FRACTIONS

INFORMATION SHEET 7--DIVIDING FRACTIONS

I. Dividing Fractions

A. To divide fractions, you first invert the fraction by which you are dividing.

B. To invert means to turn over.

C. After the fraction is inverted, multiply.

EXAMPLE: $\frac{1}{2} \div \frac{1}{5} = \frac{1}{2} \div \frac{5}{1} = \frac{5}{2}$, or $2\frac{1}{2}$

1. Invert the fraction by which you are dividing: $\frac{1}{5}$ inverted is $\frac{5}{1}$.

2. Change the division sign to the multiplication sign and multiply: $\frac{1}{2} \times \frac{5}{1} = \frac{5}{2}$ or $2\frac{1}{2}$.

II. Dividing with Whole Numbers and Fractions

A. When you divide by a whole number, give the whole number a denominator of 1.

EXAMPLE: $\frac{1}{3} \div 3 = \frac{1}{3} \div \frac{3}{1} = \frac{1}{3} \div \frac{1}{3} = \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

1. You first give the whole number a denominator of 1: $3 = \frac{3}{1}$.

2. Second, invert the fraction you are dividing by: $\frac{3}{1}$ inverted is $\frac{1}{3}$.

3. Last, change the division sign to the multiplication sign and multiply: $\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

B. There will be times when the whole number is not the number by which you are dividing.

C. In this case, you still give the whole number a denominator of 1.

EXAMPLE: $3 \div \frac{1}{8} = \frac{3}{1} \div \frac{1}{8} = \frac{3}{1} \div \frac{8}{1} = \frac{3}{1} \times \frac{8}{1} = \frac{24}{1}$, or 24.

1. First, give the whole numner a denominator of 1: $3 = \frac{3}{1}$.

2. Second, invert the fraction you are dividing by: $\frac{1}{8}$ inverted is $\frac{8}{1}$.

3. Last, change the division sign to the multiplication sign and multiply: $\frac{3}{1} \times \frac{8}{1} = \frac{24}{1}$, or 24.

III. Cancelling in Division

A. If you wish to cancel in division, invert before you multiply.

B. Multiply after you cancel.

EXAMPLE: $\frac{7}{8} \div \frac{1}{2} = \frac{7}{8} \times \frac{2}{1} = \frac{7}{\underset{4}{\cancel{8}}} \times \frac{\overset{1}{\cancel{2}}}{1} = \frac{7}{4} \times \frac{1}{1} = \frac{7}{4}$, or $1\frac{3}{4}$.

1. First, invert and change to multiplication: $\frac{7}{8} \div \frac{1}{2} = \frac{7}{8} \times \frac{2}{1}$.

2. Second, cancel: $\frac{7}{8} \times \frac{2}{1} = \frac{7}{4} \times \frac{1}{1}$.

3. Last, multiply: $\frac{7}{4} \times \frac{1}{1} = \frac{7}{4}$, or $1\frac{3}{4}$.

IV. Dividing by Mixed Numbers

A. Change mixed numbers to improper fractions.

B. Divide the fractions.

EXAMPLE: $2\frac{3}{4} \div \frac{1}{3} = \frac{11}{4} \div \frac{1}{3} = \frac{11}{4} \times \frac{3}{1} = \frac{33}{4} = 8\frac{1}{4}$.

1. First, change the mixed number to an improper fraction: $2\frac{3}{4} = \frac{11}{4}$.

2. Second, invert, change to multiplication, and multiply: $\frac{11}{4} \times \frac{3}{1} = \frac{33}{4}$.

3. Last, change improper fractions back to mixed numbers: $\frac{33}{4} = 8\frac{1}{4}$.

MULTIPLICATIVE INVERSES OR RECIPROCALS

The reciprocal of $^{3}/_{4}$

is

$^{4}/_{3}$

this fraction may be termed "inverted"

DIVIDING FRACTIONS

STEP 1: Invert the fraction you are dividing by

$^2/_3 \div ^1/_3$ **becomes** $^2/_3 \div ^3/_1$

STEP 2: Change the division sign to the multiplication sign

$^2/_3 \times ^3/_1 =$

STEP 3: Multiply

$^2/_3 \times ^3/_1 = ^6/_3$

STEP 4: Change answer to number

$^6/_3 = 2$

DIVIDING WHOLE NUMBERS BY FRACTIONS

STEP 1: When you divide by a whole number, give the whole number a denominator of "**1**"

$$1/3 \div 3 = 1/3 \div 3/1$$

STEP 2: Invert the fraction you are dividing by

$$1/3 \div 3/1 \text{ becomes } 1/3 \div 1/3$$

STEP 3: Change the division sign to the multiplication sign

$$1/3 \div 1/3 = 1/3 \times 1/3 =$$

STEP 4: Multiply

$$1/3 \times 1/3 = 1/9$$

CANCELLING IN DIVISION

STEP 1: Invert and change to multiplication

$$\frac{7}{8} \div \frac{1}{2} = \frac{7}{8} \times \frac{2}{1} =$$

STEP 2: Cancel

$$\frac{7}{\underset{4}{\cancel{8}}} \times \frac{\overset{1}{\cancel{2}}}{1}$$

STEP 3: Multiply

$$\frac{7}{4} \times \frac{1}{1} = \frac{7}{4} \text{ or } 1\frac{3}{4}$$

DIVIDING MIXED NUMBERS BY FRACTIONS

STEP 1: Change mixed number to an improper fraction

$$2\tfrac{3}{4} \div \tfrac{1}{3} = \tfrac{11}{4} \div \tfrac{1}{3}$$

STEP 2: Invert and change to multiplication

$$\tfrac{11}{4} \div \tfrac{1}{3} = \tfrac{11}{4} \times \tfrac{3}{1}$$

STEP 3: Multiply

$$\tfrac{11}{4} \times \tfrac{3}{1} = \tfrac{33}{4}$$

STEP 4: Change improper fraction back to mixed number

$$\tfrac{33}{4} = 8\tfrac{1}{4}$$

UNIT VI

FRACTIONS

ACTIVITY SHEET 29--MULTIPLICATIVE INVERSES OR RECIPROCALS

If the product of two numbers is one (1), then each factor is called the multiplicative inverse or reciprocal of the other. 3 and $\frac{1}{3}$ are reciprocals of each other because $3 \times \frac{1}{3} = 1$. $\frac{3}{4}$ and $\frac{4}{3}$ are reciprocals of each other because $\frac{3}{4} \times \frac{4}{3} = 1$. Notice that the reciprocal of any fraction is the fraction with its numerator and denominator exchanged. Remember that zero does not have a reciprocal.

EXAMPLE 1: The reciprocal of $\frac{3}{4}$ is $\frac{4}{3}$.

EXAMPLE 2: The reciprocal of 8 is $\frac{1}{8}$. Notice that we write the 8 as $\frac{8}{I}$ and then write its reciprocal $(\frac{1}{8})$.

EXAMPLE 3: The reciprocal of $3\frac{1}{2}$ is $\frac{2}{7}$. First we write $3\frac{1}{2}$ as the the improper fraction $\frac{7}{2}$ and then we write its reciprocal $(\frac{2}{7})$.

Directions: Write the reciprocal of each of the following:

1. $\frac{8}{9}$ = __________
2. 7 = __________
3. $3\frac{1}{4}$ = __________
4. $\frac{5}{6}$ = __________
5. $\frac{22}{7}$ = __________
6. $2\frac{1}{2}$ = __________
7. $\frac{25}{32}$ = __________
8. $5\frac{3}{5}$ = __________
9. $\frac{1}{10}$ = __________
10. 25 = __________

UNIT VI

FRACTIONS

ACTIVITY SHEET 30--DIVIDING FRACTIONS BY FRACTIONS

Directions: Work the following division problems.

1. $\frac{4}{8} \div \frac{2}{8} =$ __________

2. $\frac{6}{7} \div \frac{3}{4} =$ __________

3. $\frac{5}{6} \div \frac{2}{5} =$ __________

4. $\frac{5}{7} \div \frac{3}{7} =$ __________

5. $\frac{2}{3} \div \frac{2}{5} =$ __________

6. $\frac{2}{16} \div \frac{5}{16} =$ __________

7. $\frac{6}{7} \div \frac{1}{4} =$ __________

8. $\frac{5}{8} \div \frac{7}{10} =$ __________

9. $\frac{3}{4} \div \frac{3}{8} =$ __________

10. $\frac{5}{9} \div \frac{2}{3} =$ __________

11. $\frac{9}{10} \div \frac{3}{4} =$ __________

12. $\frac{5}{6} \div \frac{2}{3} =$ __________

13. $\frac{3}{8} \div \frac{3}{4} =$ __________

14. $\frac{5}{12} \div \frac{6}{15} =$ __________

15. $\frac{7}{12} \div \frac{21}{24} =$ __________

16. $\frac{6}{13} \div \frac{3}{26} =$ __________

17. $\frac{9}{10} \div \frac{3}{5} =$ __________

18. $\frac{11}{16} \div \frac{3}{8} =$ __________

19. $\frac{15}{17} \div \frac{30}{34} =$ __________

20. $\frac{15}{16} \div \frac{5}{6} =$ __________

UNIT VI

FRACTIONS

ACTIVITY SHEET 31--DIVIDING WHOLE NUMBERS BY FRACTIONS

Directions: Work the following division problems.

1. $4 \div \frac{1}{5} =$ __________

2. $2 \div \frac{1}{4} =$ __________

3. $10 \div \frac{1}{5} =$ __________

4. $6 \div \frac{1}{6} =$ __________

5. $24 \div \frac{1}{2} =$ __________

6. $25 \div \frac{1}{3} =$ __________

7. $9 \div \frac{1}{3} =$ __________

8. $10 \div \frac{1}{10} =$ __________

9. $100 \div \frac{1}{2} =$ __________

10. $2 \div \frac{1}{50} =$ __________

11. $2 \div \frac{1}{8} =$ __________

12. $3 \div \frac{1}{7} =$ __________

13. $8 \div \frac{1}{9} =$ __________

14. $6 \div \frac{1}{14} =$ __________

15. $12 \div \frac{1}{12} =$ __________

16. $4 \div \frac{1}{8} =$ __________

17. $10 \div \frac{1}{5} =$ __________

18. $2 \div \frac{1}{13} =$ __________

19. $2 \div \frac{1}{100} =$ __________

20. $1 \div \frac{1}{100} =$ __________

UNIT VI

FRACTIONS

ACTIVITY SHEET 32--DIVIDING WHOLE NUMBERS BY FRACTIONS

Directions: Work the following division problems.

1. $4 \div \frac{3}{4} =$ __________
2. $3 \div \frac{2}{5} =$ __________
3. $1 \div \frac{2}{3} =$ __________
4. $6 \div \frac{2}{3} =$ __________
5. $2 \div \frac{3}{10} =$ __________
6. $10 \div \frac{4}{5} =$ __________
7. $9 \div \frac{2}{3} =$ __________
8. $7 \div \frac{3}{4} =$ __________
9. $5 \div \frac{2}{3} =$ __________
10. $12 \div \frac{3}{8} =$ __________
11. $8 \div \frac{4}{5} =$ __________
12. $6 \div \frac{5}{8} =$ __________
13. $10 \div \frac{7}{8} =$ __________
14. $15 \div \frac{3}{5} =$ __________
15. $14 \div \frac{2}{7} =$ __________
16. $6 \div \frac{3}{11} =$ __________
17. $11 \div \frac{4}{8} =$ __________
18. $13 \div \frac{7}{9} =$ __________
19. $12 \div \frac{4}{11} =$ __________
20. $10 \div \frac{7}{10} =$ __________

ACTIVITY

FRACTIONS

ACTIVITY SHEET 33--DIVIDING MIXED NUMBERS BY FRACTIONS

Directions: Work the following division problems.

1. $4\frac{1}{3} \div \frac{1}{2}$ = ________
2. $7\frac{2}{5} \div \frac{1}{2}$ = ________
3. $8\frac{1}{8} \div \frac{3}{8}$ = ________
4. $3\frac{7}{9} \div \frac{2}{3}$ = ________
5. $2\frac{6}{7} \div \frac{4}{5}$ = ________
6. $4\frac{2}{3} \div \frac{7}{9}$ = ________
7. $2\frac{10}{12} \div \frac{2}{3}$ = ________
8. $7\frac{1}{5} \div \frac{6}{9}$ = ________
9. $5\frac{2}{3} \div \frac{4}{5}$ = ________
10. $2\frac{1}{6} \div \frac{1}{4}$ = ________
11. $3\frac{1}{3} \div \frac{2}{5}$ = ________
12. $6\frac{1}{4} \div \frac{2}{3}$ = ________
13. $1\frac{1}{2} \div \frac{3}{5}$ = ________
14. $6\frac{3}{4} \div \frac{2}{5}$ = ________
15. $3\frac{1}{5} \div \frac{4}{5}$ = ________
16. $1\frac{5}{8} \div \frac{2}{3}$ = ________
17. $5\frac{3}{5} \div \frac{7}{10}$ = ________
18. $5\frac{3}{12} \div \frac{7}{12}$ = ________
19. $3\frac{3}{11} \div \frac{6}{11}$ = ________
20. $3\frac{1}{13} \div \frac{10}{26}$ = ________

UNIT VI

FRACTIONS

ACTIVITY SHEET 34--DIVIDING FRACTIONS OR MIXED NUMBERS BY A WHOLE NUMBER

Directions: Work the following division problems.

1. $\frac{7}{8} \div 3$ = __________
2. $10\frac{1}{4} \div 6$ = __________
3. $\frac{6}{7} \div 9$ = __________
4. $4\frac{1}{2} \div 2$ = __________
5. $\frac{2}{5} \div 10$ = __________
6. $6\frac{1}{4} \div 5$ = __________
7. $\frac{9}{12} \div 3$ = __________
8. $5\frac{2}{6} \div 4$ = __________
9. $\frac{64}{15} \div 8$ = __________
10. $10\frac{7}{8} \div 10$ = __________
11. $\frac{1}{2} \div 2$ = __________
12. $2\frac{2}{3} \div 3$ = __________
13. $8\frac{1}{6} \div 7$ = __________
14. $\frac{66}{72} \div 11$ = __________
15. $6\frac{6}{7} \div 6$ = __________
16. $\frac{42}{50} \div 7$ = __________
17. $20\frac{1}{4} \div 9$ = __________
18. $6\frac{6}{7} \div 12$ = __________
19. $4\frac{4}{13} \div 14$ = __________
20. $\frac{90}{96} \div 15$ = __________

ACTIVITY

UNIT VI

FRACTIONS

ACTIVITY SHEET 35--DIVIDING MIXED OR WHOLE NUMBERS BY A MIXED NUMBER

Directions: Work the following division problems.

1. $4\frac{1}{3} \div 2\frac{1}{2} =$ __________

2. $5 \div 6\frac{1}{4} =$ __________

3. $3 \div 2\frac{2}{3} =$ __________

4. $1\frac{7}{8} \div 1\frac{1}{3} =$ __________

5. $3 \div 1\frac{6}{8} =$ __________

6. $3\frac{1}{3} \div 2\frac{1}{4} =$ __________

7. $25 \div 1\frac{1}{4} =$ __________

8. $3\frac{1}{3} \div 1\frac{4}{6} =$ __________

9. $3\frac{1}{2} \div 1\frac{1}{8} =$ __________

10. $2\frac{1}{3} \div 1\frac{3}{4} =$ __________

11. $9\frac{1}{6} \div 2\frac{3}{4} =$ __________

12. $13\frac{3}{8} \div 8\frac{3}{4} =$ __________

13. $9 \div 2\frac{1}{2} =$ __________

14. $5\frac{1}{4} \div 2\frac{1}{2} =$ __________

15. $6 \div 1\frac{2}{3} =$ __________

16. $1\frac{2}{3} \div 2\frac{1}{3} =$ __________

17. $3\frac{1}{2} \div 1\frac{1}{4} =$ __________

18. $11 \div 1\frac{1}{10} =$ __________

19. $4\frac{6}{8} \div 1\frac{6}{32} =$ __________

20. $2\frac{9}{64} \div 17\frac{1}{8} =$ __________

ACTIVITY

UNIT VI

FRACTIONS

UNIT TEST--PART 1

Match the following terms with their definitions by placing the correct letter in the blank at the left.

_____ 1. Borrow

_____ 2. Denominator

_____ 3. Factor

_____ 4. Fraction

_____ 5. Invert

_____ 6. Improper fraction

_____ 7. Lowest terms

_____ 8. Numerator

_____ 9. Proper fraction

_____ 10. Reciprocals

a. any fraction in which the numerator is larger than the denominator

b. to use one from the digit to the right

c. any number by which both the numerator and the denominator can be divided

d. a part of a whole number

e. the lowest possible number to which the numerator and denominator may be reduced without changing the value of the fraction

f. the bottom number of a fraction which tells you the number of parts into which the whole was divided

g. to turn over

h. any fraction in which the denominator is larger than the numerator

i. the fraction with its numerator and denominator exchanged

j. the top number of a fraction which tells you the number of parts you have taken away or have left

UNIT VI

FRACTIONS

UNIT TEST--PART 2

A. Identify the numerator and denominator of each of the following fractions.

1. In the fraction $\frac{5}{7}$, the numerator is _________ and the denominator is _________.

2. In the fraction $\frac{9}{10}$, the numerator is _________ and the denominator is _________.

3. In the fraction $\frac{2}{3}$, the numerator is _________ and the denominator is _________.

B. Match the fractions with the correct shaded figures.

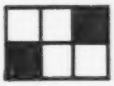
_____ 1. $\frac{1}{2}$

_____ 2. $\frac{1}{3}$

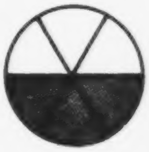
_____ 3. $\frac{2}{3}$

_____ 4. $\frac{3}{5}$

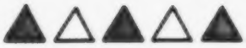
a.



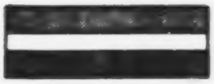
b.



c.



d.



TEST

C. Draw a suitable figure to represent each of the following fractions.

1. $\frac{1}{2}$ 2. $\frac{2}{3}$ 3. $\frac{3}{4}$ 4. $\frac{1}{5}$

D. Use the number form to write the following:

1. three-fourths _________
2. four-sevenths _________
3. five-eighths _________
4. two-thirds _________

UNIT VI

FRACTIONS

UNIT TEST--PART 3

A. Circle the proper fractions within each group of fractions.

1. $\frac{10}{7}$, $\frac{1}{2}$, $\frac{2}{3}$
2. $\frac{7}{8}$, $\frac{2}{3}$, $\frac{4}{3}$
3. $\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{2}$
4. $\frac{2}{3}$, $\frac{3}{2}$, $\frac{7}{5}$
5. $\frac{8}{5}$, $\frac{1}{9}$, $\frac{3}{9}$
6. $\frac{1}{6}$, $\frac{3}{4}$, $\frac{4}{7}$
7. $\frac{4}{9}$, $\frac{1}{5}$, $\frac{3}{2}$
8. $\frac{7}{6}$, $\frac{5}{4}$, $\frac{3}{1}$
9. $\frac{7}{15}$, $\frac{5}{13}$, $\frac{3}{10}$
10. $\frac{8}{9}$, $\frac{6}{7}$, $\frac{5}{6}$

B. Circle the improper fraction(s) within each group of fractions.

1. $\frac{3}{4}$, $\frac{9}{7}$, $\frac{1}{4}$
2. $\frac{1}{5}$, $\frac{3}{4}$, $\frac{5}{3}$
3. $\frac{2}{3}$, $\frac{16}{11}$, $\frac{13}{10}$
4. $\frac{3}{8}$, $\frac{2}{5}$, $\frac{10}{9}$
5. $\frac{4}{7}$, $\frac{5}{2}$, $\frac{1}{3}$
6. $\frac{3}{5}$, $\frac{5}{3}$, $\frac{2}{7}$
7. $\frac{5}{8}$, $\frac{5}{3}$, $\frac{5}{2}$
8. $\frac{7}{6}$, $\frac{11}{7}$, $\frac{11}{16}$
9. $\frac{1}{9}$, $\frac{3}{7}$, $\frac{7}{3}$
10. $\frac{8}{3}$, $\frac{4}{3}$, $\frac{1}{9}$

C. Change the following improper fractions to mixed numbers.

1. $\frac{17}{8} =$
2. $\frac{7}{4} =$
3. $\frac{9}{5} =$
4. $\frac{8}{7} =$

D. Change the following mixed numbers to improper fractions.

1. $2\frac{1}{2} =$
2. $3\frac{2}{3} =$
3. $4\frac{3}{4} =$
4. $1\frac{7}{8}$

E. Find an equivalent fraction for the following fractions.

1. $\frac{1}{3} =$
2. $\frac{7}{10} =$
3. $\frac{8}{9} =$
4. $\frac{2}{3} =$

UNIT VI

FRACTIONS

UNIT TEST--PART 4

A. Add the following fractions.

1. $\frac{6}{12} + \frac{5}{12} =$ ____________ 2. $\frac{3}{16} + \frac{1}{16} =$ ____________

3. $\frac{1}{3} + \frac{1}{3} =$ ____________ 4. $\frac{2}{4} + \frac{1}{4} =$ ____________

5. $\frac{4}{8} + \frac{3}{8} =$ ____________

B. Add the following fractions with unlike denominators.

EXAMPLE: $\frac{1}{2} + \frac{3}{4} = \frac{2}{4} + \frac{3}{4} = \frac{5}{4} = 1\ \frac{1}{4}$

1. $\frac{2}{3} + \frac{1}{4} =$ ____________ 2. $\frac{1}{2} + \frac{1}{5} =$ ____________

3. $\frac{1}{12} + \frac{3}{4} =$ ____________ 4. $\frac{3}{5} + \frac{1}{6} =$ ____________

5. $\frac{2}{5} + \frac{1}{2} =$ ____________

TEST

C. Add the following fractions and reduce the answer to the lowest terms.

1. $\frac{3}{8} + \frac{1}{8} =$ ____________ 2. $\frac{27}{64} + \frac{21}{64} =$ ____________

3. $\frac{3}{15} + \frac{2}{15} =$ ____________ 4. $\frac{3}{4} + \frac{1}{4} =$ ____________

5. $\frac{4}{10} + \frac{2}{10} =$ ____________

D. Add the following mixed numbers.

1. $\begin{array}{r} 4\ \frac{1}{8} \\ +\ 2\ \frac{6}{8} \\ \hline \end{array}$ 2. $\begin{array}{r} 4\ \frac{2}{12} \\ +\ 8\ \frac{3}{12} \\ \hline \end{array}$ 3. $\begin{array}{r} 8\ \frac{1}{6} \\ +\ 2\ \frac{4}{6} \\ \hline \end{array}$ 4. $\begin{array}{r} 6\ \frac{8}{16} \\ +\ 3\ \frac{5}{16} \\ \hline \end{array}$

5. $\begin{array}{r} 2\ \frac{10}{64} \\ +\ 4\ \frac{13}{64} \\ \hline \end{array}$

UNIT VI

FRACTIONS

UNIT TEST--PART 5

A. Subtract the following fractions with like denominators.

1. $\frac{7}{8} - \frac{2}{8} =$
2. $\frac{14}{32} - \frac{7}{32} =$
3. $\frac{13}{16} - \frac{3}{16} =$
4. $\frac{5}{7} - \frac{2}{7} =$
5. $\frac{7}{11} - \frac{3}{11} =$

B. Subtract the following fractions with unlike denominators.

EXAMPLE:

$$\begin{array}{rl} \frac{3}{4} = & \frac{9}{12} \\ -\ \frac{1}{3} = & \frac{4}{12} \\ \hline & \frac{13}{12} = 1\frac{1}{12} \end{array}$$

1. $\begin{array}{r} 6\frac{4}{5} \\ -\ 3\frac{2}{3} \\ \hline \end{array}$
2. $\begin{array}{r} 17\frac{5}{9} \\ -\ 3\frac{1}{3} \\ \hline \end{array}$
3. $\begin{array}{r} 9\frac{5}{7} \\ -\ 5\frac{1}{3} \\ \hline \end{array}$
4. $\begin{array}{r} \frac{11}{12} \\ -\ \frac{3}{8} \\ \hline \end{array}$
5. $\begin{array}{r} 8\frac{11}{15} \\ -\ 5\frac{7}{10} \\ \hline \end{array}$

TEST

C. Subtract the following mixed fractions with unlike denominators (borrowing).

1. $\begin{array}{r} 4\frac{2}{5} \\ -\ 2\frac{2}{4} \\ \hline \end{array}$
2. $\begin{array}{r} 6\frac{1}{3} \\ -\ 4\frac{2}{3} \\ \hline \end{array}$
3. $\begin{array}{r} 18\frac{1}{3} \\ -\ 9\frac{1}{2} \\ \hline \end{array}$
4. $\begin{array}{r} 56\frac{1}{5} \\ -\ 17\frac{1}{3} \\ \hline \end{array}$
5. $\begin{array}{r} 62\frac{1}{6} \\ -\ 25\frac{2}{3} \\ \hline \end{array}$

D. Subtract the following fractions from whole numbers.

1. $3 - \frac{1}{3} =$
2. $4 - \frac{2}{5} =$
3. $4 - \frac{1}{5} =$
4. $7 - \frac{3}{8} =$
5. $5 - \frac{1}{9} =$

E. Subtract the following mixed numbers.

1. $\begin{array}{r} \frac{5}{8} \\ -\ \frac{1}{8} \\ \hline \end{array}$
2. $\begin{array}{r} 4\frac{4}{5} \\ -\ 3\frac{2}{3} \\ \hline \end{array}$
3. $\begin{array}{r} 12\frac{3}{8} \\ -\ 7\frac{7}{8} \\ \hline \end{array}$
4. $\begin{array}{r} 5\frac{15}{32} \\ -\ 3 \\ \hline \end{array}$
5. $\begin{array}{r} 9 \\ -\ \frac{4}{5} \\ \hline \end{array}$

UNIT VI

FRACTIONS

UNIT TEST--PART 6

A. Multiply the following fractions.

1. $\frac{1}{4} \times \frac{1}{2} =$ 2. $\frac{1}{5} \times \frac{1}{4} =$ 3. $\frac{5}{12} \times \frac{1}{3} =$

4. $\frac{2}{3} \times \frac{1}{2} =$ 5. $\frac{5}{6} \times \frac{3}{8} =$

B. Multiply the following whole numbers and fractions.

1. $\frac{5}{8} \times 6 =$ 2. $10 \times 5\frac{1}{2} =$ 3. $1\frac{1}{2} \times 4\frac{2}{3} =$

4. $2\frac{1}{3} \times 3\frac{1}{2} =$ 5. $5\frac{3}{8} \times \frac{7}{8} =$

C. Multiply the following mixed numbers.

1. $\frac{2}{5} \times 3\frac{7}{8} =$ 2. $\frac{1}{8} \times 2\frac{1}{5} =$ 3. $\frac{5}{7} \times 2\frac{1}{5} =$

4. $\frac{1}{3} \times 3\frac{1}{9} =$ 5. $\frac{1}{3} \times 2\frac{1}{8} =$

D. Multiply the following fractions.

1. $\frac{2}{3} \times \frac{1}{2} =$ 2. $\frac{3}{5} \times \frac{1}{6} =$ 3. $1\frac{2}{3} \times 5\frac{2}{5} =$

4. $\frac{1}{8} \times 1\frac{7}{8} =$ 5. $\frac{3}{8} \times \frac{1}{6} =$

UNIT VI

FRACTIONS

UNIT TEST--PART 7

A. Write the reciprocal of each of the following.

1. $\frac{8}{9} =$ 2. $3\frac{1}{4} =$ 3. $2\frac{1}{2} =$ 4. $5\frac{3}{5} =$ 5. $\frac{1}{10} =$

B. Work the following division problems.

1. $\frac{5}{6} \div \frac{2}{5} =$ 2. $\frac{2}{3} \div \frac{2}{5} =$ 3. $\frac{9}{10} \div \frac{3}{5} =$

4. $\frac{15}{17} \div \frac{30}{34}$ 5. $\frac{5}{9} \div \frac{2}{3} =$

C. Work the following division problems with fractions and whole numbers.

1. $2 \div \frac{1}{4} =$ 2. $9 \div \frac{1}{3} =$ 3. $8 \div \frac{1}{9} =$

4. $2 \div \frac{1}{13} =$ 5. $4 \div \frac{1}{8} =$

D. Work the following division problems with mixed numbers.

1. $7\frac{2}{5} \div \frac{1}{2} =$ 2. $3\frac{7}{9} \div \frac{2}{3} =$ 3. $7\frac{1}{5} \div \frac{6}{9} =$

4. $5\frac{3}{5} \div \frac{7}{10} =$ 5. $3\frac{3}{11} \div \frac{6}{11} =$ 6. $10\frac{1}{4} \div 6 =$

7. $4\frac{1}{2} \div 2 =$ 8. $6\frac{6}{7} \div 6 =$ 9. $3\frac{1}{2} \div 1\frac{1}{4} =$

10. $4\frac{6}{8} \div 1\frac{6}{32}$

UNIT VII

DECIMALS

UNIT OBJECTIVE

After completion of this unit, the student will be able to use decimals in working math problems. This knowledge will be evidenced through demonstration and by satisfactorily completing the unit test.

SPECIFIC OBJECTIVES

In completing this unit of instruction, the student will:

1. Identify terms and definitions associated with decimals
2. Identify common fractions with denominators of tens, hundreds, thousands, etc.
3. Identify place value for naming the denomination of a decimal
4. Give the decimal form for a given fraction
5. Read decimals and determine their relative size
6. Write decimals in a given order according to value
7. Add or subtract problems involving only tenths when no "carrying" or "borrowing" is required
8. Add or subtract numbers involving one and two decimal places when carrying or borrowing is necessary
9. Add or subtract numbers involving no more than three decimal places when carrying or borrowing is necessary
10. Solve word problems involving the addition or subtraction of decimals with one, two, or three decimal places
11. Multiply a whole number and a decimal with one, two, or three decimal places
12. Solve word problems involving multiplication of decimals
13. Divide a decimal number by a whole number
14. Divide a one, two, or three place decimal number by a one, two, or three place decimal number
15. Solve word problems involving the division of decimals
16. When given a terminating decimal, write an equivalent common fraction

UNIT VII

DECIMALS

NOTES TO THE INSTRUCTOR

I. Objective Sheet

   A. Discuss the unit objective with the students.

   B. Discuss each specific objective with the students.

   C. Have the students complete the objectives in a sequence best suited to your classroom.

   D. Add any objectives necessary to meet fully the needs of the unit and the student.

II. Pre/Post Test

   A. The Pre/Post Test may be used to determine students' knowledge of information prior to beginning the unit.

   B. The Pre/Post Test is divided into parts to correspond with each Information Sheet.

      1. The student may not need to cover each Information Sheet.

      2. The teacher may use the test to determine the area of information with which the student may need help.

   C. The Pre/Post Test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

   A. INFORMATION SHEET 1--TERMS AND DEFINITIONS

      1. Stress to the students the importance of understanding the terms used in solving math problems using decimals.

      2. Use ACTIVITY SHEET 1--KEY TERMS to reinforce this area of instruction.

   B. INFORMATION SHEET 2--INTRODUCING DECIMALS

      1. Explain that a decimal fraction is another way or writing fractions.

      2. Discuss the use of the "decimal point" (.) in separating whole numbers from decimal fractions.

      3. Explain that the number of places to the right of the decimal point tells the size of the decimal fraction.

      4. Show TM-1--DECIMAL VALUES to reinforce this area of instruction.

5. Explain that a decimal mixed number is a whole number and a decimal fraction.

6. Explain that when you read or write decimal mixed numbers, you substitute the word "and" for the decimal point and add the proper decimal term at the end.

7. Use the following Activity Sheets to meet fully the objectives of this unit:

   a. ACTIVITY SHEET 2--READING DECIMAL NUMBERS

   b. ACTIVITY SHEET 3--READING DECIMALS

   c. ACTIVITY SHEET 4--COMPARING DECIMALS

   d. ACTIVITY SHEET 5--COMPARING DECIMALS

   e. ACTIVITY SHEET 6--ORDERING DECIMALS

   f. ACTIVITY SHEET 7--ORDERING DECIMALS

   g. ACTIVITY SHEET 8--COMPARING DECIMAL NUMBERS

8. Explain the process for changing fractions to decimals.

9. Show TM-2--CHANGING FRACTIONS TO DECIMALS to reinforce this area of instruction.

10. Use ACTIVITY SHEET 9--WRITING DECIMALS FOR FRACTIONS to reinforce this area of instruction.

11. Explain the process for changing decimals to fractions.

12. Show TM-3--CHANGING DECIMALS TO FRACTIONS to reinforce this area of instruction.

13. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 10--FRACTIONS FOR DECIMALS

    b. ACTIVITY SHEET 11--FRACTIONS FOR DECIMALS

    c. ACTIVITY SHEET 12--FRACTIONS TO DECIMALS

    d. ACTIVITY SHEET 13--FRACTIONS AND DECIMALS

C. INFORMATION SHEET 3--ADDING AND SUBTRACTING

1. Explain that decimal numbers are added and subtracted the same way whole numbers are added and subtracted.

2. Explain that it is important to have the decimal points lined up.

3. Explain that adding and subtracting mixed decimal numbers and adding or subtracting money is the same process.

4. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 14--ADDITION AND SUBTRACTION

    b. ACTIVITY SHEET 15--ADDITION AND SUBTRACTION

    c. ACTIVITY SHEET 16--ADDING AND SUBTRACTING DECIMAL NUMBERS

    d. ACTIVITY SHEET 17--ADDITION AND SUBTRACTION OF DECIMALS

    e. ACTIVITY SHEET 18--WORD PROBLEMS

    f. ACTIVITY SHEET 19--WORD PROBLEMS

D. INFORMATION SHEET 5--MULTIPLYING AND DIVIDING DECIMALS

1. Explain that decimal numbers are multiplied the same as whole numbers.

2. Explain how you determine where the decimal point will be placed in your final product.

3. Show TM-4--MULTIPLYING DECIMALS to reinforce this area of instruction.

4. Use the following Activity Sheets to meet fully the objectives of the unit.

    a. ACTIVITY SHEET 20--MULTIPLICATION: DECIMAL AND WHOLE NUMBER

    b. ACTIVITY SHEET 21--MULTIPLICATION OF DECIMALS

    c. ACTIVITY SHEET 22--MULTIPLICATION OF DECIMALS

    d. ACTIVITY SHEET 23--MULTIPLICATION OF DECIMALS

    e. ACTIVITY SHEET 24--MULTIPLICATION BY MULTIPLES OF TEN

    f. ACTIVITY SHEET 25--MULTIPLICATION BY MULTIPLES OF TEN

    g. ACTIVITY SHEET 26--MULTIPLICATION OF DECIMALS

    h. ACTIVITY SHEET 27--WORD PROBLEMS

5. Explain that decimal numbers are divided the same as whole numbers.

6. Explain that the decimal point in the answer always goes above the decimal point in the problem.

7. Explain how the caret method is used.

8. Show TM-5--CARET METHOD to reinforce this area of instruction.

9. Explain how zeros are used when there are more decimal places in the divisor than in the dividend.

10. Show TM-6--ZEROS IN DIVISION OF DECIMALS to reinforce this area of instruction.

11. Use the following Activity Sheets to meet fully the objectives of the unit.

    a. ACTIVITY SHEET 28--DIVISION OF A DECIMAL BY A WHOLE NUMBER

    b. ACTIVITY SHEET 29--DIVIDING BY MULTIPLES OF TEN

    c. ACTIVITY SHEET 30--DIVISION OF A DECIMAL BY A DECIMAL

    d. ACTIVITY SHEET 31--DIVISION OF DECIMALS

    e. ACTIVITY SHEET 32--WORD PROBLEMS

IV. Answers to Pre/Post Test

A. Answers are based on total information covered in this unit.

B. Right and wrong answers may assist the teacher in discovering individual student weaknesses.

V. Answers to Activity Sheets

A. Some of the Activity Sheets will vary according to training and should be graded individually.

B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

A. The Unit Test is divided into four parts.

   1. Each part covers one Information Sheet.

   2. Each part uses various methods of testing.

B. Various approaches may be used in testing.

   1. Give each part of the test after the student has completed the information in one information area or sheet.

   2. Give the entire test upon completion of all the Information and Activity Sheets.

   3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

C. Add test parts corresponding to any information areas of sheets added to the unit.

VII. Answers to Unit Tests

A. Answers are based on total information covered in the unit.

B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

A. Burstein, Jules. Skills in Mathematics 2. New York: Cambridge Book Company, 1973.

B. Cass, Angelica W. Skills in Mathematics 1. New York: Cambridge Book Company, 1973.

UNIT VII

DECIMALS

ANSWERS TO PRE/POST TEST

PART 1

1. c
2. a
3. b
4. d

PART 2

A. 1. two and one tenth
   2. eight tenths

B. 1. =
   2. >

C. 1. 3.8
   2. 1.68

D. 1. .583, .59, .6, 5.4
   2. .6841, .78, .933, 6.84

E. 1. .7, .07, .007, .0007
   2. 1.5, .19, .069, .03

F. 1. .25
   2. .1

G. 1. $\frac{1}{2}$
   2. $\frac{3}{5}$

PART 3

A. 1. 77.9
   2. 5.3

B. 1. 799.19
   2. 739.16

C. 1. 10.85
   2. 12.233

D. 1. 87.5 gal.

PART 4

A. 1. .21
   2. 8.01
   3. .07
   4. 1.85702

B. 1. 248,000
   2. 1,000

C. 1. .02
   2. 2.3
   3. .6
   4. 84.5

ANSWERS TO TEST

UNTI VII

DECIMALS

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1

1. decimal point
2. tenths
3. magnitude
4. ten thousandths
5. caret method
6. hundred thousandths
7. millionths
8. mixed decimal
9. hundredths
10. decimal fraction
11. thousandths

ACTIVITY SHEET 2

1. two and one tenth
2. twenty-five hundredths
3. one hundredths
4. five tenths
5. five and five hundredths
6. seventy-four hundredths
7. eight tenths
8. twenty-eight and five tenths
9. twenty-five thousandths
10. five thousandths
11. nineteen thousandths
12. two hundred eight thousandths
13. thirty-seven hundredths
14. twelve ten-thousandths

ACTIVITY SHEET 3

1. Seven tenths. $.70
2. One and two tenths. $1.20
3. One and three hundredths. $1.03
4. Eight hundredths. $.08
5. Thirty-two hundredths. $.32
6. One and six tenths. $1.60
7. Seven hundredths. $.07
8. Twenty-five thousandths. $.03
9. Seven and thirty-three hundredths. $7.33
10. Four and thirty-six hundredths. $4.36
11. Three. $3.00
12. Ten and twenty-five hundredths. $10.25
13. Eight and six tenths. $8.60
14. Seven and one hundredth. $7.01
15. Six and forty-two hundredths. $6.42
16. Five and six tenths. $5.60
17. Four tenths. $.40
18. Five hundredths. $.05
19. Five tenths. $.50
20. Two and thirty-five hundredths. $2.35

ANSWERS TO ACTIVITIES

ACTIVITY SHEET 4

1. =
2. >
3. =
4. >
5. <
6. >
7. <
8. >
9. >
10 <
11. >
12. <
13. >
14. <
15. >
16. <
17. <
18. <
19. >
20. >

ACTIVITY SHEET 5

A. 1. .8
   2. 1.5

B. 1. .04
   2. 3.816

C. C

	A	B	C	D
1.	.4	3.8	.3	.692
2.	.72	8.42	.06	4.29
3.	.9	1.68	.48	7.99
4.	.195	7.921	.799	3.067
5.	.25	2.45	.0073	5.0846

ACTIVITY SHEET 6

1. .583, .59, .6, 5.4
2. .185, .85, 8.5, 85
3. .6841, .78, .933, 6.84
4. .9059, .91, 8.95, 9.06
5. .3398, .34, .3401, .342
6. 0.998, 0.9989, 1.016, 1.03

ACTIVITY SHEET 7

A. 1. .2, .02, .002, .0002
   2. 59.7, 5.93, .598, .0599
   3. .7, .07, .007, .0007
   4. 4.78, .6, .529, .0978
   5. 1.5, .19, .069, .03
   6. 2.02, 2.009, 1.9895, 1.989

B.

Richard	(15.415)
Bill	(15.332)
Mary	(15.249)
Ann	(15.083)
Sylvia	(15.000)
John	(14.834)

ACTIVITY SHEET 8

1. a. 0.45
   b. 0.92
   c. .07
   d. 0.6
   e. 0.3
   f. 0.526
   g. 0.4
   h. 0.29

2. a. >
   b. <
   c. >
   d. <
   e. <
   f. <
   g. >
   h. <

3. a. 0.202, 2.02, 2.102, 21.02
   b. 0.090, 0.998, 1.019, 1.02
   c. 0.047, 0.048, 0.478, 0.487
   d. 0.607, 0.617, 0.67, 6.07
   e. 0.030, 0.30, 3.03, 30.0
   f. 1.01, 1.09, 1.11, 1.19

ACTIVITY SHEET 9

1. 0.25
2. 0.75
3. 0.6
4. 0.05
5. 0.017
6. 0.2
7. 0.15
8. 0.625
9. 0.08
10. 0.15
11. 0.375
12. 0.5
13. 0.52
14. 0.25
15. 0.25
16. 0.625
17. 0.8
18. 0.75
19. 0.056
20. 0.1

ACTIVITY SHEET 10

1. $\frac{1}{2}$
2. $\frac{7}{10}$
3. $\frac{9}{10}$
4. $\frac{1}{2}$
5. $\frac{18}{25}$
6. $\frac{333}{1000}$
7. $\frac{2}{25}$
8. $\frac{251}{500}$
9. $\frac{3}{1000}$
10. $\frac{159}{200}$
11. $\frac{2}{5}$
12. $\frac{14,401}{20,000}$
13. $\frac{809}{1000}$
14. $\frac{51}{1000}$
15. $\frac{51}{100}$
16. $\frac{49}{50}$
17. $\frac{50,001}{500,000}$
18. $\frac{909}{1000}$
19. $\frac{3}{5}$
20. $\frac{91}{125}$

ACTIVITY SHEET 11

1. $\frac{7}{100}$
2. $\frac{3}{10}$
3. $\frac{23}{100,000}$
4. $3\,\frac{3}{100}$
5. $\frac{3}{4}$
6. $8\,\frac{1}{5}$
7. $\frac{51}{100}$
8. $2\,\frac{3}{4}$
9. $22\,\frac{1}{2}$
10. $\frac{57}{1000}$
11. $4\,\frac{1}{5}$
12. $6\,\frac{9}{20}$
13. $5\,\frac{11}{20}$
14. $3\,\frac{419}{1000}$
15. $9\,\frac{1}{8}$
16. $\frac{1}{5}$
17. $2\,\frac{3}{1000}$
18. $3\,\frac{7}{8}$
19. $4\,\frac{49}{50}$
20. $6\,\frac{1}{400}$

ACTIVITY SHEET 12

1. 0.6
2. 0.02
3. 2.5
4. 0.1
5. 0.96
6. 0.9
7. 0.06
8. 0.5
9. 0.088
10. 0.08
11. 5.75
12. 0.4
13. 0.4
14. 0.75
15. 0.02
16. 0.3
17. 0.08
18. 0.5
19. 0.176
20. 0.55

ACTIVITY SHEET 13

1. 0.5
2. 1
3. $\frac{25}{100}$
4. 8
5. 0.375
6. $\frac{2}{5}$
7. 10
8. 4
9. 0.75
10. $\frac{3}{8}$
11. $\frac{375}{1000}$
12. 25
13. 0.025
14. 5
15. 0.625
16. $\frac{9}{10}$
17. 0.9
18. 3
19. $\frac{750}{10000}$
20. 8
21. $\frac{875}{1000}$

ACTIVITY SHEET 14

1. 77.9
2. 19.6
3. 99.9
4. 18.9
5. 5.3
6. 31.0
7. 1.7
8. 11.2
9. 21.1
10. 9.7
11. 23.9
12. 9.2
13. 7.4
14. 12.5
15. 16.0
16. 19.3
17. 114.2
18. 100.2
19. 1.5
20. 69.2

ACTIVITY SHEET 15

1. 41.98
2. 9.85
3. 5.03
4. 107.78
5. 3.48
6. 8.46
7. 76.74
8. 84.02
9. 8032.62
10. 245.1
11. 58.11
12. 5379.75
13. .06
14. 860.04
15. 17.45
16. 363.21
17. 799.19
18. 739.16
19. .81
20. 377.78

ACTIVITY SHEET 16

1. 10.85
2. 10.4
3. 12.233
4. 1.59
5. 10.2
6. 8.73
7. 2.938
8. 24.432
9. 14.226
10. 13.622
11. $19.60
12 $12.33
13. $103.26
14. $29.27
15. $87.14
16. $41.72
17. $32.09
18. $4.18
19. $3.51
20. $2.80
21. 22.424
22. 98.981
23. 89.955
24. 2.544
25. 33.767
26. 4.885

ACTIVITY SHEET 17

ACROSS

1. 42.875
5. .25
6. .08
7. 0.44
9. 40.995
11. .64
12. 6.9
13. 7.29
15. .169
17. 4.01
19. 34.3
21. 7.56
23. .512
25. 83.2
27. 74.088
29. 5.8
31. .81
32. .01728
34. 71.264

DOWN

1. 4.2
2. 25.0047
3. 7.04969
4. 58
8. 4.9
9. 4.6
10. 5.9
14. .216
15. .144
16. 9.61
18. .004
19. 3.57
20. .306
22. .581
23. .5184
24. 28.28
26. 3.01
27. 795.07
28. 8.5184
30. .811
31. .826
33. 7.2

ACTIVITY SHEET 18

1. a. addition
   b. will vary
   c. $2.20

2. a. addition
   b. will vary
   c. 5.41 inches

3. a. subtraction
   b. will vary
   c. $4.52

4. a. subtraction
   b. will vary
   c. .413 seconds

5. a. addition
   b. will vary
   c. 87.5 gal.

6. a. addition
   b. will vary
   c. 1.605 kg.

ACTIVITY SHEET 19

1. $175.49
2. 1.9195 in.
3. $86,125.70
4. $151.20
5. $192.25
6. $1,035.65
7. $2,897.30
8. $2,166.72
9. 94.25"
10. $119.85

ACTIVITY SHEET 20

1. .21
2. 1.47
3. 49.7
4. 16.8
5. .48
6. 8.01
7. 19.2
8. .22
9. 8.646
10. 38.69
11. 55.632
12. 63.19
13. .75
14. 12.624
15. 1.66

ACTIVITY SHEET 21

1. .44
2. 14.24
3. 105
4. 53.75
5. 36.55
6. 10.68
7. 11.2
8. 4.9
9. 26.32
10. 54.94
11. 2.56
12. 130.4
13. 8,350
14. .7
15. 5750

ACTIVITY SHEET 22

1. 6.007
2. .0007
3. 3.231
4. .204
5. 37.3848
6. 4.998
7. 600.2733
8. 8.6075
9. .4914
10. 3.6096
11. 3.74
12. .2632
13. .456
14. 600.07
15. 6.0007

ACTIVITY SHEET 23

1. .00123
2. .07
3. .008003
4. .0723
5. 2.85708
6. .3312
7. 600.28845
8. .115968
9. 37.41848
10. .038502
11. 2.394
12. .156546
13. 21.096327
14. 1.85702
15. 110.0352

ACTIVITY SHEET 24

1. a. 1.5
   b. .12
   c. 13.05
   d. 120.2
   e. 3
   f. 100.1
2. a. 5,730
   b. 124.5
   c. 1
   d. 10,320
   e. 72.5
   f. 5.5
3. a. 1,000
   b. 204,100
   c. 22,220
   d. 10,732
   e. 10
   f. 3
   g. 1010.2
   h. 15,200
   i. 16,700
   j. 1,973,200

ACTIVITY SHEET 25

1. 8
2. 25
3. 150
4. .6
5. 12.5
6. 72
7. 2.75
8. 9.4
9. 16,000
10. 2,525
11. 248,000
12. 160,130
13. 91,470
14. 18,724
15. 2024.75
16. 70,530
17. 60,460.29
18. 72,020.36
19. 1,000
20. 24,300

ACTIVITY SHEET 26

ACROSS

1. 1.44
4. .76
6. 22.452
8. .481
9. .33
10. .96
12. 1265.6
14. .21
15. .09
16. 69.6
18. 8.67
20. 25
21. .54
22. 21.6
24. 8.68
26. 99
27. 41
28. 36.7
30. 1.5
31. 3.6
33. .18235
35. 1.17
36. .63768
38. .297
39. 3.36

DOWN

2. .42
3. 42.432
4. 151.951
5. .12
7. .48
9. .31
11. 6.6
13. 6.299
15. .0648
17. .6075
19. .6241
21. .5248
23. .6789
25. .6916
27. 43.58137
29. .733763
30. 1.1
32. .65
34. 2.17
36. .69
37. 8.3

ACTIVITY SHEET 27

1. 1185.48 lb.
2. 1687.5 lb
3. $16.90
4. $1.06
5. $39.56
6. 48.96 hr.
7. $53.24
8. $663
9. 1987.5 lb.
10. 1473.92 lb.

ACTIVITY SHEET 28

1. .02
2. .3
3. .03
4. .04
5. .004
6. .25
7. 2.3
8. .023
9. 3.5
10. .10511
11. .0225
12. 2.27
13. .27
14. .035

ACTIVITY SHEET 29

1. 1.195
2. 2.345
3. .69
4. 0.3263
5. 2.7906
6. 9.690
7. .69607
8. 72.72
9. 0.0069
10. 0.007
11. 0.0025
12. 1.378
13. 6.50
14. 18.407
15. 8.9875

ACTIVITY SHEET 30

1. 410
2. 0.6
3. 3
4. 30
5. 9.09
6. 293.16
7. 19.74
8. 0.51
9. 5.6
10. 500
11. 1.56
12. 15
13. 84.5
14. 32.65
15. 2.5

ACTIVITY SHEET 31

ACROSS

1. .428
4. 61.7
5. .12
7. 8.5184
9. .549
12. 6.7
13. .82
15. 6.25
17. .27
18. 4.0621
22. .96
23. .76
24. 21.893
27. 56
28. 82
29. 6.57
30. 329

DOWN

1. .46
2. 210.5
3. 8.7
5. .18
6. 24.5
8. 106
10. 4.8
11. 926
14. 5.2
16. 5.76
18. 4.9
19. .06
20. 2.716
21. 16.8
24. 25
25. 98.52
26. 3279
29. 63

ACTIVITY SHEET 32

1. 54
2. 40
3. $2.75
4. $11.56
5. $245
6. $.05
7. $19.11
8. 11
9. 12
10. 27

UNIT VII

DECIMALS

ANSWERS TO UNIT TEST

PART 1

1. b
2. e
3. h
4. k
5. f
6. d
7. a
8. i
9. c
10. g
11. j

PART 2

A. 1. two and one tenth
   2. five tenths
   3. twenty-five thousandths
   4. thirty-seven hundredths
   5. eight tenths

B. 1. =
   2. =
   3. >
   4. >
   5. >

C. 1. 3.8
   2. 2.45
   3. 1.68
   4. 7.921
   5. 8.42

D. 1. .583, .59, .6, 5.4
   2. .6841, .78, .933, 6.84

E. 1. .7, .07, .007, .0007
   2. 1.5, .19, .069, .03

F. 1. .25
   2. .6
   3. .625
   4. .625
   5. .1

G. 1. $\frac{1}{2}$
   2. $\frac{18}{25}$
   3. $\frac{3}{1000}$
   4. $\frac{3}{5}$
   5. $\frac{2}{5}$

PART 3

A. 1. 77.9
   2. 5.3
   3. 23.9
   4. 9.2

B. 1. 58.11
   2. .06
   3. 799.19
   4. 739.16

C. 1. 10.85
   2. 12.233
   3. $19.60
   4. $32.09

D. 1. 87.5 gal.
   2. 1.9195 in.

ANSWERS TO TEST

PART 4

A.
1. .21
2. 49.7
3. 8.01
4. 55.632

B.
1. .07
2. 600.28845
3. .156546
4. 1.85702

C.
1. 248,000
2. 70,530
3. 1,000
4. 24,300

D.
1. .02
2. 2.3
3. .0225
4. .035

E.
1. .6
2. 30
3. 15
4. 84.5

F.
1. 54
2. $19.11

UNIT VII

DECIMALS

PRE/POST TEST

PART 1

Match the terms with their definitions by placing the correct letter in the blanks at the left.

_____ 1. Caret method

_____ 2. Decimal fraction

_____ 3. Decimal point

_____ 4. Mixed decimal

a. a part of a whole number, set apart from the whole number by a decimal point

b. the symbol used to separate a whole number from a decimal number

c. the decimal point is moved to the right, the caret symbol (^) is used to mark the new location

d. a whole number and a decimal fraction

PART 2

A. Write the following numbers in words.

1. 2.10 ____

2. .8 ____

B. Compare the following decimals using the symbols >,< , or =.

1. 7.01 _____ 7.01

2. 4.3 _____ 4.29

C. Circle the greater number:

1. 3.8 or .38

2. 1.68 or .307

D. Arrange in order of size (smallest first).

1. .59, .6, 5.4, .583 ____

2. .78, .933, 6.84, .6841 ____

E. Arrange in order of size (greatest first).

1. .07, .007, .0007, .7 ____________________

2. 1.5, .03, .069, .19 ____________________

F. Write the following fractions in decimal form.

1. $\frac{1}{4}$ = ________

2. $\frac{3}{30}$ = ________

G. Write the following decimals in fractions.

1. .5 = ________

2. .6 = ________

PART 3

A. Work the following problems:

1. $\begin{array}{r} 73.8 \\ +\ 4.1 \\ \hline \end{array}$

2. $\begin{array}{r} 8.5 \\ -\ 3.2 \\ \hline \end{array}$

B. Work the following problems:

1. $\begin{array}{r} 786.2 \\ +\ 12.99 \\ \hline \end{array}$

2. $\begin{array}{r} 948.16 \\ -\ 209 \\ \hline \end{array}$

C. Work the following problems:

1. $\begin{array}{r} 8.37 \\ +\ 2.48 \\ \hline \end{array}$

2. $\begin{array}{r} 5.30 \\ 0.733 \\ +\ 6.20 \\ \hline \end{array}$

D. Find the total gallons of gasoline used on a trip. The gallons at each fill-up were: 15.3, 17.8, 12.6, 18.3, 8.6, 14.9. ________

PART 4

A. Work the following multiplication problems:

1. $\begin{array}{r} 0.3 \\ \times \quad 7 \\ \hline \end{array}$ 2. $\begin{array}{r} .89 \\ \times \quad 9 \\ \hline \end{array}$ 3. $\begin{array}{r} 7000 \\ \times\ .00001 \\ \hline \end{array}$ 4. $\begin{array}{r} 42.205 \\ \times \quad .044 \\ \hline \end{array}$

B. Multiply the following.

1. 24.8 x 10,000 = ______________

2. .1 x 10,000 = ______________

C. Divide the following problems:

1. $4\,\overline{)\,.08}$ 2. $3\,\overline{)\,6.9}$

3. 7.26 ÷ 12.1 = 4. 7.605 ÷ .09 =

UNIT VII

DECIMALS

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. Caret method--moving the decimal point to the right; the caret symbol (^) is used to mark the new location
2. Decimal fraction--a part of a whole number, set apart from the whole number by a decimal point
3. Decimal point--the symbol used to separate a whole number from a decimal number (.)
4. Hundredths--the position two places to the right of the decimal point
5. Hundred thousandths--the position five places to the right of the decimal point
6. Magnitude--the value of the decimal fraction as tenths, hundredths, thousandths, etc.
7. Millionths--the position six places to the right of the decimal point
8. Mixed decimal--a whole number and a decimal fraction
9. Tenths--the position one place to the right of the decimal point
10. Ten thousandths--the position four places to the right of the decimal point
11. Thousandths--the position three places to the right of the decimal point

INFORMATION

UNIT VII

DECIMALS

ACTIVITY SHEET 1--KEY TERMS

Directions: Fill in each blank in the sentences below by changing the numbers to letters using the key.

Key:
1=A
2=B
3=C
4=D
5=E
6=F
7=G
8=H
9=I
10=J
11=K
12=L
13=M
14=N
15=O
16=P
17=Q
18=R
19=S
20=T
21=U
22=V
23=W
24=X
25=Y
26=Z

1. The symbol used to separate a whole number from a decimal number is the

   4 5 3 9 13 1 12   16 15 9 14 20 .

2. 20 5 14 20 8 19 is the position one place to the right of the decimal point.

3. The value of the decimal fraction as tenths, hundredths, thousandths, etc. is the

   13 1 7 14 9 20 21 4 5 .

4. The 20 5 14 20 8 15 21 19 1 14 4 20 8 19 position is four places to the right of the decimal point.

5. When using the 3 1 18 5 20   13 5 20 8 15 4 , the decimal point is moved to the right.

6. The position five places to the right of the decimal point is the

   8 21 14 4 18 5 4   20 8 15 21 19 1 14 4 20 8 19 .

7. The 13 9 12 12 9 15 14 20 8 19 position is the position six places to the right of the decimal point.

8. A 13 9 24 5 4   4 5 3 9 13 1 12 is a whole number and a decimal fraction.

ACTIVITY

9. The position two places to the right of the decimal point is the $\overline{8}\ \overline{21}\ \overline{14}\ \overline{4}\ \overline{18}\ \overline{5}\ \overline{4}\ \overline{20}\ \overline{8}\ \overline{19}$ position.

10. A $\overline{4}\ \overline{5}\ \overline{3}\ \overline{9}\ \overline{13}\ \overline{1}\ \overline{12}\quad \overline{6}\ \overline{18}\ \overline{1}\ \overline{3}\ \overline{20}\ \overline{9}\ \overline{15}\ \overline{14}$ is a part of a whole number, set apart from the whole number by a decimal point.

11. The $\overline{20}\ \overline{8}\ \overline{15}\ \overline{21}\ \overline{19}\ \overline{1}\ \overline{14}\ \overline{4}\ \overline{20}\ \overline{8}\ \overline{19}$ position is the position three places to the right of the decimal point.

UNIT VII

DECIMALS

INFORMATION SHEET 2--INTRODUCING DECIMALS

I. Decimal Fractions

A. The use of decimal fractions is another way of writing fractions.

B. To make a number a decimal, place a symbol called a "decimal point" (.) in front of it.

C. Whole numbers appear to the left of the decimal point.

D. The number of places to the right of the decimal point tells the size of the decimal fraction.

EXAMPLE:

.5	tenths	5/10
.05	hundredths	5/100
.005	thousandths	5/1,000
.0005	ten thousandths	5/10,000
.00005	hundred thousandths	5/100,000
.000005	millionths	5/1,000,000

E. The decimal fraction gets smaller the farther you go to the right of the decimal point.

II. Decimal Mixed Number

A. A decimal mixed number is a whole number and a decimal fraction.

B. When you read or write a decimal mixed number, substitute the word "and" for the decimal point.

C. Add the proper decimal term at the end.

EXAMPLE: 5.03 is five and three hundredths.

III. Fractions May Be Changed to Decimals

A. Find an equal fraction for the one given so that the denominator of the equivalent fraction is 10, 100, 1,000, etc.

EXAMPLE: $\frac{2}{5} = \frac{2}{5} \times \frac{2}{2} = \frac{4}{10}$

B. Using the proper place value, write the fraction as a decimal.

EXAMPLE: $\frac{4}{10} = .4$

IV. Decimals May Be Changed to Fractions

A. Read the decimal number and write it out as a fraction.

EXAMPLE: $.05 = \frac{5}{100}$

B. If you have a mixed decimal, change it to an improper fraction by dividing it by the decimal's order of magnitude.

EXAMPLE: $3.25 = 3\,\frac{25}{100} = 3\,\frac{1}{4}$

DECIMAL VALUES

.5 tenths $5/10$

.05 hundredths $5/100$

.005 thousandths $5/1,000$

.0005 ten thousandths $5/10,000$

.00005 hundred thousandths $5/100,000$

.000005 millionths $5/1,000,000$

TM-1

535

CHANGING FRACTIONS TO DECIMALS

$$2/5 = 2/5 \times 2/2 = 4/10$$

REWRITE AS DECIMAL

.4

CHANGING DECIMALS TO FRACTIONS

$$.05 = {}^{5}\!/_{100} = {}^{1}\!/_{20}$$

UNIT VII

DECIMALS

ACTIVITY SHEET 2--READING DECIMAL NUMBERS

Directions: Write the following correctly in words.

EXAMPLE: 12.04 = twelve and four hundredths
Digits to the left of the decimal point: 12
Decimal part: and
Digits to the right of the decimal point: four hundredths, since 4 is in the hundredths place.

Thousands	Hundreds	Tens	Ones	Decimal Point	Tenths	Hundredths	Thousandths	Ten Thousandths
0	0	0	0	•	1			
0	0	0	0	•	0	1		
0	0	0	0	•	0	0	1	
0	0	0	0	•	0	0	0	1

1. 2.10 ____________________
2. .25 ____________________
3. .01 ____________________
4. .5 ____________________
5. 5.05 ____________________
6. .74 ____________________
7. .8 ____________________
8. 28.50 ____________________
9. .025 ____________________
10. .005 ____________________
11. .019 ____________________
12. .208 ____________________
13. .37 ____________________
14. .0012 ____________________

DECIMALS

ACTIVITY SHEET 3--READING DECIMALS

Directions: Read the following decimals, write them in words, and write their monetary values in the space provided. Remember that monetary value means dollars and cents.

1. .7 = ______________________
2. 1.2 = ______________________
3. 1.03 = ______________________
4. .08 = ______________________
5. .32 = ______________________
6. 1.6 = ______________________
7. .07 = ______________________
8. .025 = ______________________
9. 7.33 = ______________________
10. 4.36 = ______________________

11. 3. = ______________________
12. 10.25 = ______________________
13. 8.6 = ______________________
14. 7.01 = ______________________
15. 6.42 = ______________________
16. 05.6 = ______________________
17. .4 = ______________________
18. .05 = ______________________
19. 0.5 = ______________________
20. 2.35 = ______________________

UNIT VII

DECIMALS

ACTIVITY SHEET 4--COMPARING DECIMALS

Directions: Compare the following decimals using the symbols >, <, or =.

1. 7.01 _____ 7.01
2. 34.21 _____ 3.421
3. 6.42 _____ 6.420
4. $78.24 _____ $76.24
5. 3.87 _____ 3.88
6. 8.6 _____ 8.5639
7. 4.834 _____ 4.854
8. .8 _____ .62
9. 1.5 _____ .15
10. .04 _____ .4
11. 3.82 _____ 3.816
12. .692 _____ 6.92
13. 4.3 _____ 4.29
14. .99 _____ 8.3
15. 6.80 _____ 6.08
16. 0.01 _____ 0.012
17. 1.09 _____ 1.1
18. 0.24 _____ 0.3
19. .755 _____ 0.75
20. 0.67 _____ 0.607

ACTIVITY

UNIT VII

DECIMALS

ACTIVITY SHEET 5--COMPARING DECIMALS

Directions: Read and follow individual instructions.

A. Which number is greater?

1. .8 or .62? __________

2. 1.5 or .15? __________

B. Which number is smaller?

1. .04 or .4? __________

2. 3.82 or 3.816? __________

C. This is a picture of a pipe:

A	B	C	D
3.72 cm	3.63 cm	3.75 cm	3.70 cm

Which section is the thickest? ________

D. Read the decimal numbers in each group and circle as indicated.

Group A
Circle the greater decimal:

1. .4 or .39
2. .72 or .597
3. .9 or .084
4. .195 or .1949
5. 249 or .25

Group B
Circle the greater number:

1. 3.8 or .38
2. .862 or 8.42
3. 1.68 or .307
4. 7.921 or 7.9209
5. 2.45 or .253

Group C
Circle the smaller decimal:

1. .3 or .31
2. .60 or .06
3. .48 or .5
4. .8 or .799
5. .0073 or .008

Group D
Circle the smaller number:

1. 6.92 or .692
2. 4.3 or 4.29
3. 7.99 or 8.3
4. 3.67 or 3.067
5. 5.0846 or 5.08461

DECIMALS

ACTIVITY SHEET 6--ORDERING DECIMALS

Arrange in order of size (smallest first).

1. .59, .6, 5.4, .583 ____________________

2. 8.5, 85, .85, .185 ____________________

3. .78, .933, 6.84, .6841 ____________________

4. 9.06, .91, .9059, 8.95 ____________________

5. .34, .342, .3401, .3398 ____________________

6. 1.03, 0.998, 0.9989, 1.016 ____________________

UNIT VII

DECIMALS

ACTIVITY SHEET 7--ORDERING DECIMALS

A. Arrange in order of size (greatest first).

1. .02, .2, .002, .0002 ________________
2. 5.93, 59.7, .598, .0599 ________________
3. .07, .007, .7, .0007 ________________
4. 4.78, .0978, .529, .6 ________________
5. 1.5, .03, .069, .19 ________________
6. 2.02, 0.989, 1.9895, 2.009 ________________

B. Arrange the ages of the following students in decreasing order (oldest first).

John	Ann	Bill	Sylvia	Mary	Richard	
14.834	15.083	15.332	15.000	15.249	15.415	= Age in Years

____

____

____

____

____

____

ACTIVITY

UNIT VII

DECIMALS

ACTIVITY SHEET 8--COMPARING DECIMAL NUMBERS

1. Circle the larger decimal fraction in each of the following.

   a. 0.18, 0.45

   b. 0.8, 0.92

   c. 0.7, 0.07

   d. 0.59, 0.6

   e. 0.3, 0.29

   f. 0.526, 0.059

   g. 0.31, 0.4

   h. 0.289, 0.29

2. Use the symbols > (greater than) or < (less than) to make each statement true.

   a. 0.56 _____ 0.554

   b. 0.604 _____ 0.639

   c. 0.2 _____ 0.02

   d. 0.49 _____ 0.5

   e. 5.69 _____ 5.699

   f. 1.01 _____ 1.9

   g. 0.3 _____ 0.298

   h. 0.009 _____ 0.05

3. Rearrange each set in order from smallest to largest.

   a. 2.02, 2.102, 21.02, 0.202

   ____

   b. 1.02, 0.998, 0.090, 1.019

   ____

   c. 0.487, 0.478, 0.047, 0.048

   ____

   d. 0.67, 0.607, 6.07, 0.617

   ____

   e. 30.0, 0.30, 0.030, 3.03

   ____

   f. 1.01, 1.11, 1.19, 1.09

   ____

UNIT VII

DECIMALS

ACTIVITY SHEET 9--WRITING DECIMALS FOR FRACTIONS

To write the decimal form of a given fraction, find an equivalent fraction for the one given such that the equivalent fraction contains 10, 100, 1,000, etc. as the denominator. You may use a place value chart to help you write the decimal form. Write the following fractions as decimals.

EXAMPLE: 1. $\frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10} = .4$

2. $\frac{4}{8} = \frac{4 \div 4}{8 \div 4} = \frac{1}{2} = \frac{1 \times 5}{2 \times 5} = \frac{5}{10} = .5$

1. $\frac{1}{4}$ = ____________________
2. $\frac{3}{4}$ = ____________________
3. $\frac{3}{5}$ = ____________________
4. $\frac{1}{20}$ = ____________________
5. $\frac{17}{1000}$ = ____________________
6. $\frac{6}{30}$ = ____________________
7. $\frac{3}{20}$ = ____________________
8. $\frac{5}{8}$ = ____________________
9. $\frac{1}{125}$ = ____________________
10. $\frac{3}{20}$ = ____________________
11. $\frac{3}{8}$ = ____________________
12. $\frac{2}{4}$ = ____________________
13. $\frac{13}{25}$ = ____________________
14. $\frac{3}{12}$ = ____________________
15. $\frac{5}{20}$ = ____________________
16. $\frac{25}{40}$ = ____________________
17. $\frac{4}{5}$ = ____________________
18. $\frac{6}{8}$ = ____________________
19. $\frac{7}{125}$ = ____________________
20. $\frac{3}{30}$ = ____________________

UNIT VII

DECIMALS

ACTIVITY SHEET 10--FRACTIONS FOR DECIMALS

Directions: Change each of the following to its common fraction from and simplify if possible

Remember these rules:

1. Write the number without the decimal point as the numerator.
2. Write 1 followed by as many zeros as there are places to the right of the decimal point in the original decimal number.
3. Reduce the fraction to lowest terms.

EXAMPLE: $.35 = \frac{35}{100} = \frac{7}{20}$

1. .5 = __________

2. .70 = __________

3. .9 = __________

4. .50 = __________

5. .72 = __________

6. .333 = __________

7. .080 = __________

8. .502 = __________

9. .003 = __________

10. .795 = __________

11. .400 = __________

12. .72005 = __________

13. .8090 = __________

14. .0510 = __________

15. .51 = __________

16. .98 = __________

17. .100002 = __________

18. .909 = __________

19. .6 = __________

20. .7280 = __________

UNIT VII

DECIMALS

ACTIVITY SHEET 11--FRACTIONS FOR DECIMALS

Directions: Write a fraction equivalent for each of the following and reduce the fraction part.

EXAMPLE: $3.25 = 3\,\frac{25 \div 25}{100 \div 25} = 3\,\frac{1}{4}$

1. 0.07 = ________
2. 0.3 = ________
3. 0.00023 = ________
4. 3.03 = ________
5. 0.75 = ________
6. 8.2 = ________
7. 0.51 = ________
8. 2.75 = ________
9. 22.5 = ________
10. 0.057 = ________
11. 4.2 = ________
12. 6.45 = ________
13. 5.55 = ________
14. 3.419 = ________
15. 9.125 = ________
16. .200 = ________
17. 2.003 = ________
18. 3.875 = ________
19. 4.98 = ________
20. 6.0025 = ________

DECIMALS

ACTIVITY SHEET 12--FRACTIONS TO DECIMALS

Directions: Write the decimal form for each of the following:

1. $\frac{3}{5}$ = ________________
2. $\frac{1}{50}$ = ________________
3. $\frac{5}{2}$ = ________________
4. $\frac{3}{30}$ = ________________
5. $\frac{24}{25}$ = ________________
6. $\frac{36}{40}$ = ________________
7. $\frac{3}{50}$ = ________________
8. $\frac{1}{2}$ = ________________
9. $\frac{11}{125}$ = ________________
10. $\frac{2}{25}$ = ________________
11. $5\frac{3}{4}$ = ________________
12. $\frac{2}{5}$ = ________________
13. $\frac{32}{80}$ = ________________
14. $\frac{12}{16}$ = ________________
15. $\frac{4}{200}$ = ________________
16. $\frac{6}{20}$ = ________________
17. $\frac{6}{75}$ = ________________
18. $\frac{35}{70}$ = ________________
19. $\frac{22}{125}$ = ________________
20. $\frac{44}{80}$ = ________________

DECIMALS

ACTIVITY SHEET 13--FRACTIONS AND DECIMALS

Directions: Complete the table below:

Common Fractions	Decimal Fractions	Decimals
$\frac{1}{2}$	$\frac{50}{100}$	(1)
(2) $\frac{\ }{4}$	(3)	.25
(4) $\frac{3}{\ }$	$\frac{375}{1000}$	(5)
(6)	(7) $\frac{4}{\ }$	.4
(8) $\frac{3}{\ }$	$\frac{75}{100}$	(9)
(10)	(11)	.375
$\frac{1}{40}$	(12) $\frac{\ }{1000}$	(13)
(14) $\frac{\ }{8}$	$\frac{625}{1000}$	(15)
$\frac{9}{10}$	(16)	(17)
(18) $\frac{\ }{4}$	(19)	.750
(20) $\frac{7}{\ }$	(21)	.875

UNIT VII

DECIMALS

INFORMATION SHEET 3--ADDING AND SUBTRACTING DECIMALS

I. How Are Decimals Added?

A. Line up the numbers so that the decimal points are under each other.

B. Add the decimal numbers as you would add whole numbers.

C. Be sure to place the decimal point in your answer under the other decimal points.

EXAMPLE:

```
 .4        .24
+.2        .12
 .6      + .36
           .72
```

II. Adding Decimal Numbers and Whole Numbers

A. Line up the numbers so that the decimal points are under each other.

B. The whole numbers should be on the left side of the decimal point.

C. The decimal numbers should be on the right side of the decimal point.

D. Add the decimal numbers as you add the whole numbers.

E. Be sure to place the decimal point in your answer under the other decimal point.

EXAMPLE:

```
  4.1        1.42
+ 3.6     +   .13
  7.7        1.55
```

III. Adding Money

A. Adding money is the same as adding any other decimal or mixed decimal.

B. The decimal point separates dollars from cents.

EXAMPLE:

```
$ .62      $1.75
+ .13      + .52
$ .75      $2.27
```

IV. How Are Decimals Subtracted?

A. Line up the numbers so that the decimal points are under each other.

B. Subtract the decimal as you would subtract whole numbers.

C. You may need to add zeros to the right of your decimal fraction.

EXAMPLE:

$$\begin{array}{r} .2 \\ -\ .17 \\ \hline \end{array} = \begin{array}{r} .20 \\ -\ .17 \\ \hline \end{array}$$

(NOTE: Zeros added to the right of a decimal fraction do not change the value of the fraction.)

D. Be sure to place the decimal point in your answer under the other decimal points.

V. Subtracting Decimals and Whole Numbers

A. Line up the numbers so that the decimal points are under each other.

B. The whole numbers should be to the left of the decimal point.

C. The decimal numbers should be on the right side of the decimal point.

D. Subtract the decimal numbers as you subtract the whole numbers.

E. Be sure to place the decimal point in your answer under the other decimal point.

EXAMPLE:

$$\begin{array}{r} 20.3 \\ -\ 17.15 \\ \hline \end{array} = \begin{array}{r} 20.30 \\ -\ 17.15 \\ \hline 3.15 \end{array}$$

UNIT VII

DECIMALS

ACTIVITY SHEET 14--ADDITION AND SUBTRACTION

Directions: Work the following problems.

1. 73.8
+ 4.1

2. 11.3
6.2
+ 2.1

3. 78.3
+ 21.6

4. 7.3
10.3
+ 1.3

5. 8.5
- 3.2

6. 37.3
- 6.3

7. 9.7
- 8

8. 18.8
- 7.6

9. 21.9
- .8

10. 2.7
+ 7

11. 21.7
+ 2.2

12. 9.6
- .4

13. 9.9
- 2.5

14. 12.9 - .4 = ____

15. 16.9 - .9 = ____

16. 10.3 + 9 = ________

17. 117.7 - 3.5 = ________

18. 100.8 - .6 = ________

19. 4.9 - 3.4 = ________

20. 69.3 + .1 = ________

ACTIVITY

UNIT VII

DECIMALS

ACTIVITY SHEET 15--ADDITION AND SUBTRACTION

Directions: Work the following problems.

1. $\begin{array}{r} 34.58 \\ +\ 7.4 \\ \hline \end{array}$ 2. $\begin{array}{r} 9.6 \\ +\ .25 \\ \hline \end{array}$ 3. $\begin{array}{r} 8.3 \\ -\ 3.27 \\ \hline \end{array}$ 4. $\begin{array}{r} 100.5 \\ +\ 7.28 \\ \hline \end{array}$

5. 4.08 - .6 = __________ 6. 8.5 - .04 = __________

7. 46 + 30.74 = __________ 8. 84.1 - .08 = __________

9. 8,541.62 - 509 = __________ 10. 245.73 - .63 = __________

11. $\begin{array}{r} 58.10 \\ +\ .01 \\ \hline \end{array}$ 12. $\begin{array}{r} 5{,}276 \\ +\ 103.75 \\ \hline \end{array}$ 13. $\begin{array}{r} .08 \\ -\ .02 \\ \hline \end{array}$ 14. $\begin{array}{r} 866.7 \\ -\ 6.66 \\ \hline \end{array}$

15. $\begin{array}{r} 17.6 \\ -\ .15 \\ \hline \end{array}$ 16. $\begin{array}{r} 342 \\ +\ 21.21 \\ \hline \end{array}$ 17. $\begin{array}{r} 786.2 \\ +\ 12.99 \\ \hline \end{array}$ 18. $\begin{array}{r} 948.15 \\ -\ 209 \\ \hline \end{array}$

19. $\begin{array}{r} .90 \\ -\ .09 \\ \hline \end{array}$ 20. $\begin{array}{r} 375.9 \\ +\ 1.88 \\ \hline \end{array}$

ACTIVITY

UNIT VII

DECIMALS

ACTIVITY SHEET 16--ADDING AND SUBTRACTING DECIMAL NUMBERS

Directions: Add the following decimal numbers.

1. 8.37
+ 2.48

2. 5.8
0.9
+ 3.7

3. 5.30
0.733
+ 6.20

4. 0.565
0.325
+ 0.70

5. 1.17
5.06
+ 3.97

6. 0.7 + 8.03 = _____

7. 1.888 + 0.15 + 0.9 = _____

8. 17.07 + 3.26 + 4.102 = _____

9. 5.233 + 8.634 + 0.359 = _____

10. 3.5 + 7.065 + 3.057 = _____

11. $15.65
+ 3.95

12. $7.27
+ 5.06

13. $87.50
+ 15.76

14. $ 9.29
+ 19.98

15. $ 3.39
+ 83.75

Subtract the following decimal numbers.

16. $75.95
- 34.23

17. $35.16
- 3.07

18. $7.95
- 3.77

19. $13.26
- 9.75

20. $8.03
- 5.23

21. 37.67 - 15.246 = _____

22. 123.98 - 24.999 = _____

23. 99.952 - 9.997 = _____

24. 3.7 - 1.156 = _____

25. 36.222 - 2.455 = _____

26. 17.041 - 12.156 = _____

ACTIVITY

UNIT VII

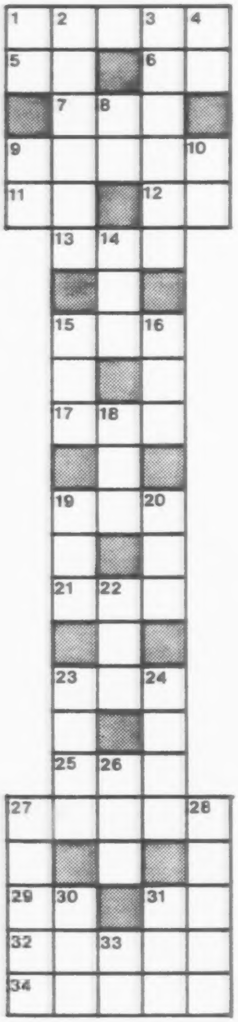
DECIMALS

ACTIVITY SHEET 17--ADDITION AND SUBTRACTION OF DECIMALS

Directions: Work the following problems and fill in the puzzle.

ACROSS

1. 50.000 - 7.125
5. .05 + .20
6. .10 - .02
7. .031 + .013
9. 45.000 - 4.005
11. .29 + .35
12. 9.6 - 2.7
13. 3.17 + 4.12
15. 1.000 - .831
17. 2.98 + 1.03
19. 17.5 + 16.8
21. 3.97 + 3.59
23. 3.000 - 2.488
25. 37.9 + 19.7 + 25.6
27. 100 - 25.912
29. 2.5 + 3.3
31. 2.00 - 1.19
32. 1.00000 - .98272
34. 35.632 + 35.632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DOWN

1. 6.1 - 1.9
2. 26.0000 - .9953
3. 10.00000 - 2.95031
4. 39.8 + 18.2
8. 2.3 + 2.6
9. 8.5 - 3.9
10. 7.2 - 1.3
14. 0.035 + .181
15. .153 - .009
16. 4.79 + 4.82
18. .013 - .009
19. 2.29 + 1.28
20. .229 + .077
22. .760 - .179
23. 1.2431 - .7247
24. 9.39 + 18.89
26. 4.98 - 1.97
27. 476.38 + 318.69
28. 3.4376 + 5.0808
30. 1.111 - .300
31. .973 - .147
33. 3.5 + 3.7

ACTIVITY

UNIT VII

DECIMALS

ACTIVITY SHEET 18--WORD PROBLEMS

Directions: Follow these steps to solve a word problem.

a. Read each problem carefully.

b. Decide which operation -- addition or subtraction -- you need to use.

c. Make an estimate of the answer.

d. Work the problem and compare your answer with the estimate.

Work the following problems, using the steps given above.

1. Jim spent $0.63 for a ball point pen, $1.05 for a loose leaf binder, and $.52 for filler paper. Find the total amount he spent for school supplies.

   Operation ______________ Estimate ______________ Answer ______________

2. The rainfall during the month of April was 0.12 in., 3.20 in., 0.57 in., 1.29 in., and 0.23 in. What was the total rainfall for the month?

   Operation ______________ Estimate ______________ Answer ______________

3. Motor oil costs $14.40 a case at a service station. A department store sells the same motor oil for $9.88 a case. How much can be saved by buying a case of oil at the department store?

   Operation ______________ Estimate ______________ Answer ______________

4. Last year Don's best time for running a mile was 4.586 min. This year his best time is 4.173 min. How much faster did he run the mile this year?

   Operation ______________ Estimate ______________ Answer ______________

5. Find the total gallons of gasoline used on a trip. The gallons at each fill-up were: 15.3, 17.8, 12.6, 18.3, 8.6, 14.9.

   Operation ______________ Estimate ______________ Answer ______________

6. Phil was weighing some cans of food in the metric system. Find the total weight: tomatoes, 0.458 kilograms (kg); green beans, .523 kg; shoestring potatoes, .046 kg; corn, 0.578 kg.

   Operation ______________ Estimate ______________ Answer ______________

UNIT VII

DECIMALS

ACTIVITY SHEET 19--WORD PROBLEMS

Directions: Read the following word problems and work them.

1. Add $33.81, $25.69, $13.72, $47.67, and $54.60. ______

2. A table top 1.857 inches thick is covered with laminated plastic .0625 inches thick. What is the total thickness of the top? ______

3. After completing six small homes, a contractor found that the costs were $13,152.46; $14,037; $14,987.78; $13,490.12; $15,048.61; and $15,409.73. What is the total cost? ______

4. A homeowner paid $96.48 for shingles, $6.72 for nails, and paid a carpenter $48.00 for labor. What is the total cost of labor and material? ______

5. A carpenter must pay $120.25 for shingles, $12.00 for nails, and $60.00 for labor. What is the total amount to be paid? ______

6. A carpenter receives $460.25 for shingling a house and $575.40 for building a patio. How much will be received for both jobs? ______

7. An expense record for one week is as follows: material $1,349.20; labor $897.65; salaried help $375.00; and overhead expenses $275.45. What are the total expenses for the week? ______

8. A contractor's records show that the material on a job costs $1,289.45, the labor $678.92, and the overhead $69.45. He/she wants to realize a profit of $128.90. What total figure should be submitted to the owner? ______

9. What is the total height of a stairway with the following dimensions?
   Floor to first landing 15.5"
   Landing to second floor 78.75" ______

10. Find the total cost of material and labor for laying a finish floor using the following figures: Flooring $65.20, Finish $8.35, and Labor $46.30. ______

UNIT VII

DECIMALS

INFORMATION SHEET 4--MULTIPLYING AND DIVIDING DECIMALS

I. How Are Decimals Multiplied?

A. Decimal multiplication is worked the same way as whole number multiplication.

B. You must place a decimal point in the final product.

C. The number of decimal places in your final product must equal the number of decimal places in the multiplier and multiplicand.

EXAMPLE:

$$\begin{array}{rl} 1.5 & \text{(one decimal place in the multiplicand)} \\ \underline{\times\ \ .3} & \text{(one decimal place in the multiplier)} \\ .45 & \text{(two decimal places in the product)} \end{array}$$

II. How Are Decimals Divided?

A. Decimal numbers are divided the same as whole numbers.

B. The decimal point in the answer always goes above the decimal point in the problem.

EXAMPLE:

$$\begin{array}{r} .2 \\ 2\overline{).4} \end{array}$$

C. To begin, move the decimal point using the caret method.

D. The symbol for caret is (^).

EXAMPLE:

$$.5_{\wedge}\overline{).15} \qquad .5_{\wedge}\overline{).1_{\wedge}5} \qquad \begin{array}{r} .3 \\ .5_{\wedge}\overline{).1_{\wedge}5} \end{array}$$

E. When there are more decimal places in the divisor than in the dividend zeros are added to the dividend.

EXAMPLE:

$$.003_{\wedge}\overline{)9.9} \qquad .003_{\wedge}\overline{)9.900} \qquad \begin{array}{r} 3300. \\ .003_{\wedge}\overline{)9.900_{\wedge}} \end{array}$$

MULTIPLYING DECIMALS

1.5 (one decimal place in the multiplicand)

.3 (one decimal place in the multiplier)

.45 (two decimal places in the product)

CARET METHOD

$$.5_{\wedge}\overline{)\,.15}$$

$$.5_{\wedge}\overline{)\,.1_{\wedge}5}$$

$$\begin{array}{r} .3 \\ .5_{\wedge}\overline{)\,.1_{\wedge}5} \end{array}$$

ZERO IN DIVISION OF DECIMALS

$$.003_{\wedge}\overline{)\,9.9}$$

$$.003_{\wedge}\overline{)\,9.900}$$

$$\begin{array}{r} 3300. \\ .003_{\wedge}\overline{)\,9.900_{\wedge}} \end{array}$$

UNIT VII

DECIMALS

ACTIVITY SHEET 20--MULTIPLICATION: DECIMAL AND WHOLE NUMBER

Directions: Work the following multiplication problems.

1. $\begin{array}{r} .03 \\ \underline{\text{x} \ \ 7} \end{array}$

2. $\begin{array}{r} .49 \\ \underline{\text{x} \ \ 3} \end{array}$

3. $\begin{array}{r} 71 \\ \underline{\text{x} \ .7} \end{array}$

4. $\begin{array}{r} 56 \\ \underline{\text{x} \ 0.3} \end{array}$

5. $\begin{array}{r} .12 \\ \underline{\text{x} \ \ 4} \end{array}$

6. $\begin{array}{r} .89 \\ \underline{\text{x} \ \ 9} \end{array}$

7. $\begin{array}{r} 32 \\ \underline{\text{x} \ .6} \end{array}$

8. $\begin{array}{r} 11 \\ \underline{\text{x} \ 0.02} \end{array}$

9. $\begin{array}{r} .786 \\ \underline{\text{x} \ \ 11} \end{array}$

10. $\begin{array}{r} 53 \\ \underline{\text{x} \ .73} \end{array}$

11. $\begin{array}{r} 76 \\ \underline{\text{x} \ .732} \end{array}$

12. $\begin{array}{r} .89 \\ \underline{\text{x} \ 71} \end{array}$

13. $\begin{array}{r} 150 \\ \underline{\text{x} \ .005} \end{array}$

14. $\begin{array}{r} .789 \\ \underline{\text{x} \ \ 16} \end{array}$

15. $\begin{array}{r} .083 \\ \underline{\text{x} \ \ 20} \end{array}$

UNIT VII

DECIMALS

ACTIVITY SHEET 21--MULTIPLICATION OF DECIMALS

Directions: Work the following multiplication problems.

1. 22 x .02

2. 356 x .04

3. 17.5 x 6

4. 107.5 x 0.5

5. 4.3 x 8.5

6. 8.9 x 1.2

7. 0.7 x 16

8. 3.5 x 1.4

9. 5.6 x 4.7

10. 8.2 x 6.7

11. 1.6 x 1.6

12. 13.04 x 10

13. 83.5 x 100

14. .07 x 10

15. 57.5 x 100

ACTIVITY

UNIT VII

DECIMALS

ACTIVITY SHEET 22--MULTIPLICATION OF DECIMALS

Directions: Work the following multiplication problems.

1. 600.7
x .01

2. .007
x 0.1

3. 3.59
x .9

4. 6.8
x .03

5. 88.8
x .421

6. 3.57
x 1.4

7. 198.11
x 3.03

8. 2.75
x 3.13

9. .63
x .78

10. 3.008
x 1.2

11. 6.8
x .55

12. .56
x .47

13. .1 x 4.56 = ________________

14. 1.0 x 600.07 = ________________

15. .01 x 600.07 = ________________

UNIT VII

DECIMALS

ACTIVITY SHEET 23--MULTIPLICATION OF DECIMALS

Directions: Work the following multiplication problems.

1. .041
x .03

2. 7000
x .00001

3. .08003
x .1

4. 12.05
x .006

5. 3.48
x .821

6. 6.90
x .048

7. 198.115
x 3.03

8. .384
x .302

9. 88.88
x .421

10. .621
x .062

11. 34.2
x .0700

12. .0702
x 2.23

13. 30.009
x .703

14. 42.205
x .044

15. 1250.4
x .098

UNIT VII

DECIMALS

ACTIVITY SHEET 24--MULTIPLICATION BY MULTIPLES OF TEN

Directions: Work the following problems.

1. Multiply each number by 10 by moving the decimal point one place to the right of the number.

a. .15 x 10 = ______ b. 0.012 x 10 = ______ c. 1.305 x 10 = ______
d. 12.02 x 10 = ______ e. 0.3 x 10 = ______ f. 10.01 x 10 = ______

2. Multiply each number by 100. Move the decimal point two places to the right.

a. 57.30 x 100 = _____ b. 1.245 x 100 = _____ c. .01 x 100 = ______
d. 103.2 x 100 = _____ e. 0.725 x 100 = _____ c. 0.055 x 100 = ______

3. Multiply each number by 1000. Move the decimal point three places to the right.

a. 1.000 x 1000 = __________ f. .003 x 1000 = __________
b. 204.1 x 1000 = __________ g. 1.0102 x 1000 = __________
c. 22.22 x 1000 = __________ h. 15.2 x 1000 = __________
d. 10.732 x 1000 = __________ i. 16.7 x 1000 = __________
e. .01 x 1000 = __________ j. 1973.2 x 1000 = __________

UNIT VII

DECIMALS

ACTIVITY SHEET 25--MULTIPLICATION BY MULTIPLES OF TEN

Directions: Work the following problems.

EXAMPLE: .00736 x 1,000 = 7.36
Because there are three zero digits in 1,000, the decimal point is moved three places to the right, thus:

007.36
123

1. .8 x 10 = ____________
2. .25 x 100 = ____________
3. .15 x 1,000 = ____________
4. .06 x 10 = ____________
5. .125 x 100 = ____________
6. .072 x 1,000 = ____________
7. .275 x 10 = ____________
8. .094 x 100 = ____________
9. 1.6 x 10,000 = ____________
10. 25.25 x 100 = ____________
11. 24.8 x 10,000 = ____________
12. 16.013 x 10,000 = ____________
13. 9.147 x 10,000 = ____________
14. 18.724 x 1,000 = ____________
15. 202.475 x 10 = ____________
16. 70.53 x 1,000 = ____________
17. 6046.029 x 10 = ____________
18. 7202.036 x 10 = ____________
19. .1 x 10,000 = ____________
20. 24.3 x 1,000 = ____________

ACTIVITY

UNIT VII

DECIMALS

ACTIVITY SHEET 26--MULTIPLICATION OF DECIMALS

Directions: Work the following problems, then complete the puzzle.

ACROSS

1. 2.4 x .6
4. 3.8 x .2
6. 56.13 x .4
8. .481 x 1
9. .3 x 1.1
10. 8 x .12
12. 1808 x .7
14. .3 x .7
15. .3 x .3
16. 8.7 x 8
18. 1.7 x 5.1
20. 50 x .5
21. 2.7 x .2
22. 3.6 x 6
24. 14 x .62
26. 3.3 x 30
27. 10 x 4.1
28. 3.67 x 10
30. 5 x .3
31. 4 x 19
33. .2605 x .7
35. .39 x 3
36. 5.314 x .12
38. 2.7 x .11
39. 1.6 x 2.1

DOWN

2. 1.4 x .3
3. 22.1 x 1.92
4. 286.7 x .53
5. .4 x .3
7. .6 x .8
9. .1 x 3.1
11. 3.3 x 2
13. 10 x .6299
15. .54 x .12
17. .75 x .81
19. .79 x .79
21. .82 x .64
23. .73 x .93
25. .76 x .91
27. 6.307 x 6.91
29. .907 x .809
30. 10 x .11
32. 1.3 x .5
34. .31 x 7
36. 2.3 x .3
37. 10 x .83

UNIT VII

DECIMALS

ACTIVITY SHEET 27--WORD PROBLEMS

Directions: Read and work each problem.

1. Find the weight of 534 square feet of 1/4-inch asphalt tile if the average weight per square foot is 2.22 pounds. ________

2. The weight of 1/4-inch plywood is 1.50 pounds per square foot. What is the weight of 1,125 square feet? ________

3. A man can turn four wood columns in 5.2 hours. At a rate of $3.25 per hour, what is the cost of his labor? ________

4. If it takes .4 of an hour to lay 100 square feet of deadening felt strips, what is the labor cost per 100 square feet at a rate of $2.65 per hour? ________

5. Determine the labor cost on 23 window screens if each screen takes .8 hour to build at an hourly rate of $2.15. ________

6. Finish flooring is estimated to take 3.2 hours per 100 square feet (one square). At that rate, how much time does it take to lay a floor 15.3 squares in area? (one square = 100 square feet) ________

7. The material needed for the floor of a deck is estimated to be 81.9 board feet at a cost of $.65 a board foot. What is the total cost of the material? ________

8. A builder buys oak flooring in three lots as follows: 750 bd. ft., 970 bd. ft., and 230 bd. ft. What is the total cost at 34 cents per board foot? ________

9. Determine the total weight of 75 cartons of hardwood block flooring if one carton weighs 26.5 pounds. ________

10. What is the weight of 752 square feet of 1/8-inch rubber tile if the average weight per square foot is 1.96 pounds? ________

UNIT VII

DECIMALS

ACTIVITY SHEET 28--DIVISION OF A DECIMAL BY A WHOLE NUMBER

Directions: Divide the following and check by multiplication.

EXAMPLE: $$\begin{array}{r} .2 \\ 4\overline{)\,.8} \\ \underline{8} \end{array}$$ check: $$\begin{array}{r} 4 \\ \underline{\times\ .2} \\ .8 \end{array}$$

1. 4 .08

2. 8 2.4

3. 8 .24

4. 5 .2

5. 5 .02

6. 64 16

7. 3 6.9

8. 42 .966

9. 21 73.5

10. 54 .0816

11. 30 .6750

12. 2 4.54

13. 35 9.45

14. 21 0.735

ACTIVITY

UNIT VII

DECIMALS

ACTIVITY SHEET 29--DIVIDING BY MULTIPLES OF TEN

Directions: Divide as indicated by moving the decimal points.

1. 119.5 ÷ 100 = ________
2. 234.5 ÷ 100 = ________
3. 6.9 ÷ 10 = ________
4. 326.3 ÷ 1,000 = ________
5. 279.06 ÷ 100 = ________
6. 9690 ÷ 1,000 = ________
7. 696.07 ÷ 1,000 = ________
8. 7272 ÷ 100 = ________
9. 0.69 ÷ 100 = ________
10. 0.07 ÷ 10 = ________
11. 2.5 ÷ 1,000 = ________
12. 13.78 ÷ 10 = ________
13. 650 ÷ 100 = ________
14. 184.07 ÷ 10 = ________
15. 8987.5 ÷ 1,000 = ________

UNIT VII

DECIMALS

ACTIVITY SHEET 30--DIVISION OF A DECIMAL BY A DECIMAL

Directions: Divide and check by multiplication.

EXAMPLE: 5.472 ÷ .06

$$\begin{array}{r} 91.2 \\ .06\,\overline{)\,5.472} \\ \underline{54} \\ 7 \\ \underline{6} \\ 12 \\ \underline{12} \end{array}$$

1. 3.28 ÷ .008

2. 7.26 ÷ 12.1

3. .03 .09

4. .15 4.5

5. .9 8.181

6. .61 178.8276

7. .612 12.08088

8. 25.5 ÷ 50

9. 2.1 11.76

10. .03 15

11. 2.1 3.276

12. 133.5 ÷ 8.9

13. 7.605 ÷ .09

14. .7   22.855

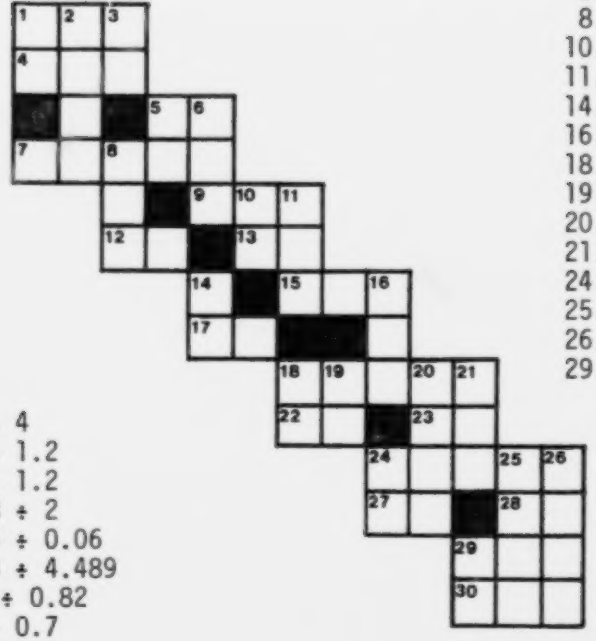
15. 9.2   23

UNIT VII

DECIMALS

ACTIVITY SHEET 31--DIVISION OF DECIMALS

Directions: Work each problem, then fill in the puzzle.


1
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24
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27
28
29
30

DOWN

1. 0.2116 ÷ 0.46
2. 1473.5 ÷ 7
3. 65.8503 ÷ 7.569
5. 1.296 ÷ 7.2
6. 75.95 ÷ 3.1
8. 445.2 ÷ 4.2
10. 0.192 ÷ 0.04
11. 1574.2 ÷ 1.7
14. 13 ÷ 2.5
16. 19.008 ÷ 3.3
18. 0.0294 ÷ 0.006
19. 0.30 ÷ 5
20. 29.876 ÷ 11
21. 0.84 ÷ 0.05
24. 3 ÷ 0.12
25. 295.56 ÷ 3
26. 6590.79 ÷ 2.01
29. 64.89 ÷ 1.03

ACROSS

1. 1.712 ÷ 4
4. 74.04 ÷ 1.2
5. 0.144 ÷ 1.2
7. 17.0368 ÷ 2
9. 0.03294 ÷ 0.06
12. 30.0763 ÷ 4.489
13. 0.6724 ÷ 0.82
15. 4.375 ÷ 0.7
17. 1.404 ÷ 5.2
18. 2.84347 ÷ 0.7
22. 4.896 ÷ 5.1
23. 0.000456 ÷ 0.0006
24. 109.465 ÷ 5
27. 100.8 ÷ 1.8
28. 123 ÷ 1.5
29. 6.7014 ÷ 1.02
30. 1085.7 ÷ 3.3

ACTIVITY

UNIT VII

DECIMALS

ACTIVITY SHEET 32--WORD PROBLEMS

Directions: Read and work each problem.

1. How many pieces of plywood, each .375 inch thick, are there in a stack 20.25 inches high? ________

2. A worker received a paycheck for $90.00. How many hours were worked if the wage rate is $2.25 per hour? ________

3. A check for $170.50 is received for 62 hours of work. Find the hourly rate. ________

4. The cost of purchasing and laying 21 squares of asphalt shingles was $242.76. Determine the cost per square. ________

5. A contractor purchased 4500 board feet of timber for $1,102.50. What is the cost per thousand board feet? ________

6. The cost of 568 linear feet of base shoe is $28.40. What is the price paid per foot? ________

7. A house when completed cost $31,378.62. What is the average cost per square foot of floor space if the house contains 1,642 square feet? ________

8. How many pieces of 2.25-inch face flooring are required for a closet 24.75 inches deep? ________

9. The total run of stairs is 103.5 inches. Each tread of the rough stringer is 8.625 inches. How many treads are there in the stairs? ________

10. A platform 141.75 inches wide is to be covered with 5.25-inch face sheathing. How many pieces of sheathing are required? ________

UNIT VII

DECIMALS

UNIT TEST--PART 1

Directions: Match the terms with their definitions by placing the correct letter in the blanks at the left.

a. Caret method

b. Decimal fraction

c. Decimal point

d. Hundredths

e. Hundred thousandths

f. Magnitude

g. Millionths

h. Mixed decimal

i. Tenths

j. Ten thousandths

k. Thousandths

_____ 1. a part of a whole number set apart from the whole number by a decimal point

_____ 2. the position five places to the right of the decimal point

_____ 3. a whole number and a decimal fraction

_____ 4. the position three places to the right of the decimal point

_____ 5. the value of the decimal fraction as tenths, hundredths, thousandths, etc.

_____ 6. the position two places to the right of the decimal point

_____ 7. the decimal point is moved to the right, the caret symbol ( ) is used to mark the new location

_____ 8. the position one place to the right of the decimal point

_____ 9. the symbol used to separate a whole number from a decimal number

_____ 10. the position six places to the right of the decimal point

_____ 11. the position four places to the right of the decimal point

UNIT VII

DECIMALS

UNIT TEST--PART 2

A. Write the following decimal numbers in words.

1. 2.10 ____
2. .5 ____
3. .025 ____
4. .37 ____
5. .8 ____

B. Compare the following decimals using the symbols >, < or =.

1. 7.01 __________ 7.01
2. 6.42 __________ 6.420
3. .8 __________ .62
4. 4.3 __________ 4.29
5. .755 __________ 0.75

TEST

C. Circle the greater number.

1. 3.8 or .38
2. 2.45 or .253
3. 1.68 or .307
4. 7.921 or 7.9209
5. .862 or 8.42

D. Arrange in order of size (smallest first).

1. .59, .6, 5.4, .583 ________________________________
2. .78, .933, 6.84, .6841 ________________________________

E. Arrange in order of size (greatest first).

1. .07, .007, .7, .0007 ________________________________
2. 1.5, .03, .069, .19 ________________________________

F. Write the following fractions in decimal form.

1. $\frac{1}{4}$ = __________

2. $\frac{3}{5}$ = __________

3. $\frac{5}{8}$ = __________

4. $\frac{25}{40}$ = __________

5. $\frac{3}{30}$ = __________

G. Write the following decimals in fractions.

1. .5 = __________

2. .72 = __________

3. .003 = __________

4. .6 = __________

5. .400 = __________

UNIT VII

DECIMALS

UNIT TEST--PART 3

A. Work the following problems:

1. $\begin{array}{r} 73.8 \\ +\ 4.1 \\ \hline \end{array}$
2. $\begin{array}{r} 8.5 \\ -\ 3.2 \\ \hline \end{array}$
3. $\begin{array}{r} 21.7 \\ +\ 2.2 \\ \hline \end{array}$
4. $\begin{array}{r} 9.6 \\ -\ .4 \\ \hline \end{array}$

B. Work the following problems:

1. $\begin{array}{r} 58.10 \\ +\ .01 \\ \hline \end{array}$
2. $\begin{array}{r} .08 \\ -\ .02 \\ \hline \end{array}$
3. $\begin{array}{r} 786.2 \\ +\ 12.99 \\ \hline \end{array}$
4. $\begin{array}{r} 948.16 \\ -\ 209 \\ \hline \end{array}$

C. Work the following problems:

1. $\begin{array}{r} 8.37 \\ +\ 2.48 \\ \hline \end{array}$
2. $\begin{array}{r} 5.30 \\ 0.733 \\ +\ 6.20 \\ \hline \end{array}$
3. $\begin{array}{r} \$15.65 \\ +\ 3.95 \\ \hline \end{array}$
4. $\begin{array}{r} \$35.16 \\ -\ 3.07 \\ \hline \end{array}$

TEST

D. Read and work the following problems:

1. Find the total gallons of gasoline used on a trip. The gallons at each fill-up were: 15.3, 17.8, 12.6, 18.3, 8.6, 14.9. ________

2. A table top 1.857 inches thich is covered with laminated plastic .0625 thick. What is the total thickness of the top? ________

UNIT VII

DECIMALS

UNIT TEST--PART 4

A. Work the following multiplication problems:

1. $\begin{array}{r} .03 \\ \times\ \ 7 \\ \hline \end{array}$ 2. $\begin{array}{r} 71 \\ \times\ .7 \\ \hline \end{array}$ 3. $\begin{array}{r} .89 \\ \times\ \ 9 \\ \hline \end{array}$ 4. $\begin{array}{r} 76 \\ \times\ .732 \\ \hline \end{array}$

B. Work the following multiplication problems:

1. $\begin{array}{r} 7000 \\ \times\ .00001 \\ \hline \end{array}$ 2. $\begin{array}{r} 198.115 \\ \times\ \ 3.03 \\ \hline \end{array}$ 3. $\begin{array}{r} .0702 \\ \times\ 2.23 \\ \hline \end{array}$ 4. $\begin{array}{r} 42.205 \\ \times\ \ .044 \\ \hline \end{array}$

C. Multiply the following:

1. 24.8 x 10,000 = __________
2. 70.53 x 1,000 = __________
3. .1 x 10,000 = __________
4. 24.3 x 1,000 = __________

D. Divide the following problems:

1. $4\overline{).08}$ 2. $3\overline{)6.9}$ 3. $30\overline{).6750}$ 4. $21\overline{)0.735}$

E. Divide the following decimals by decimals.

1. 7.26 ÷ 12.1 =

2. $.15\overline{)4.5}$

3. 133.5 ÷ 8.9 =

4. 7.605 ÷ .09

F. Read and work the following word problems.

1. How many pieces of plywood, each .375 inch thick, are there in a stack 20.25 inches high? __________

2. A house when completed cost $31,378.62. What is the average cost per square foot of floor space if the house contains 1,642 square feet? __________

UNIT VIII

PERCENTS

UNIT OBJECTIVE

After completion of this unit, the student will be able to use percents in working math problems. This knowledge will be evidenced through demonstration and by satisfactorily completing the unit test.

SPECIFIC OBJECTIVES

In completing this unit of instruction, the student will:

1. Identify terms and definitions associated with percentages
2. Change decimals to percents
3. Change percents to decimals
4. Change fractions to percents
5. Change percents to fractions
6. Find the percent of a quantity
7. Find what percent one quantity is of another
8. Find the number when you know a percent of it
9. Solve simple problems involving fractions, decimals, or percents

UNIT VIII

PERCENTS

NOTES TO THE INSTRUCTOR

I. Objective Sheet

   A. Discuss the unit objective with the students.

   B. Discuss each specific objective with the students.

   C. Have the students complete the objectives in a sequence best suited to your classroom.

   D. Add any objectives necessary to meet fully the needs of the unit and the student.

II. Pre/Post Test

   A. The Pre/Post Test may be used to determine students' knowledge of information prior to beginning the unit.

   B. The Pre/Post Test is divided into parts to correspond with each Information Sheet.

      1. The student may not need to cover each Information Sheet.

      2. The teacher may use the test to determine the area of information with which the student may need help.

   C. The Pre/Post Test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

   A. INFORMATION SHEET 1--TERMS AND DEFINITIONS

      1. Stress to the students the importance of understanding the terms used in solving problems involving percents.

      2. Use ACTIVITY SHEET 1--FILL IN THE BLANKS to reinforce this area of instruction.

   B. INFORMATION SHEET 2--WORKING WITH PERCENTS

      1. Explain how decimals are changed to percents.

      2. Show TM-1--CHANGING DECIMALS TO PERCENTS to reinforce this area of instruction.

3. Use the following Activity Sheets to meet fully the objectives of the unit.
    a. ACTIVITY SHEET 2--CHANGING DECIMALS TO PERCENTS
    b. ACTIVITY SHEET 3--CHANGING DECIMALS TO PERCENTS
4. Explain how percents are changed to decimals
5. Show TM-2--CHANGING PERCENTS TO DECIMALS to reinforce this area of instruction.
6. Use the following Activity Sheets to meet fully the objectives of the unit.
    a. ACTIVITY SHEET 4--CHANGING PERCENTS TO DECIMALS
    b. ACTIVITY SHEET 5--CHANGING PERCENTS TO DECIMALS
7. Explain how fractions are changed to percents.
8. Show TM-3--CHANGING FRACTIONS TO PERCENTS.
9. Use the following Activity Sheets to meet fully the objectives of the unit.
    a. ACTIVITY SHEET 6--CHANGING FRACTIONS TO PERCENTS
    b. ACTIVITY SHEET 7--CHANGING FRACTIONS TO PERCENTS--DIVISION METHOD
10. Explain how percents are changed to fractions.
11. Show TM-4--CHANGING PERCENTS TO FRACTIONS to reinforce this area of instruction.
12. Use the following Activity Sheets to meet fully the objectives of the unit.
    a. ACTIVITY SHEET 8--CHANGING PERCENTS TO FRACTIONS
    b. ACTIVITY SHEET 9--CHANGING PERCENTS TO FRACTIONS

C. INFORMATION SHEET 3--USING PERCENTS

1. Explain how to find the percent of a quantity.
2. Show TM-5--PERCENT OF A QUANTITY to reinforce this area of instruction.
3. Use the following Activity Sheets to meet fully the objectives of the unit.
    a. ACTIVITY SHEET 10--PERCENTAGE OF A NUMBER

   b. ACTIVITY SHEET 11--PERCENTAGE OF A NUMBER

   c. ACTIVITY SHEET 12--FINDING THE PERCENTAGE OF A NUMBER

4. Explain how to find what percent one quantity is of another.

5. Show TM-6--WHAT PERCENT IS ONE NUMBER OF ANOTHER? to reinforce this area of instruction.

6. Use the following Activity Sheets to meet fully the objectives of the unit.

   a. ACTIVITY SHEET 13--FINDING THE PERCENT

   b. ACTIVITY SHEET 14--FINDING WHAT PERCENT ONE NUMBER IS OF ANOTHER

   c. ACTIVITY SHEET 15--FINDING WHAT PERCENT ONE NUMBER IS OF ANOTHER

7. Explain how to find a number when you know a percent.

8. Show TM-7--FINDING A NUMBER WHEN YOU KNOW A PERCENT to reinforce this area of instruction.

9. Use the following Activity Sheets to meet fully the objectives of the unit.

   a. ACTIVITY SHEET 16--FINDING THE MISSING NUMBER

   b. ACTIVITY SHEET 17--FINDING A NUMBER WHEN A PERCENT OF IT IS GIVEN

   c. ACTIVITY SHEET 18--PROBLEM SOLVING: FINDING A NUMBER WHEN A PERCENT OF IT IS GIVEN

   d. ACTIVITY SHEET 19--MULTIPLICATION: FRACTION, DECIMAL, PERCENT

   e. ACTIVITY SHEET 20--CHANGING MONEY TO PERCENT

IV. Answers to Pre/Post Test

   A. Answers are based on total information covered in this unit.

   B. Right and wrong answers may assist the teacher in discovering individual student weaknesses.

V. Answers to Activity Sheets

   A. Some of the Activity Sheets will vary according to training and should be graded individually.

   B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

A. The Unit Test is divided into three parts.

1. Each part covers one Information Sheet.

2. Each part uses various methods of testing.

B. Various approaches may be used in testing.

1. Give each part of the test after the student has completed the information in one information area or sheet.

2. Give the entire test upon completion of all the Information and Activity Sheets.

3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

C. Add test parts corresponding to any information areas or sheets added to the unit.

VII. Answers to Unit Tests

A. Answers are based on total information covered in the unit.

B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

Burstein, Jules. Skills in Mathematics 2. New York: Cambridge Book Company, 1973.

UNIT VIII

PERCENTS

ANSWERS TO PRE/POST TEST

PART 1

1. b
2. c
3. a

PART 2

A. 1. 37%
   2. 362%

B. 1. .25
   2. .79

C. 1. 50%
   2. 54%

D. 1. $\frac{1}{20}$
   2. $\frac{3}{5}$

PART 3

A. 1. 5
   2. 20

B. 1. 50%
   2. 3.125%

C. 1. 20
   2. 3000

PERCENTS

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1

1. Per centum
2. Part
3. Base quantity
4. Percent symbol
5. Percentage

ACTIVITY SHEET 2

1. 3%
2. 37%
3. 51.2% = 51 $\frac{1}{5}$%
4. 65%
5. 62.5% = 62 $\frac{1}{2}$%
6. 37.5% = 37 $\frac{1}{2}$%
7. .6% = $\frac{3}{5}$ %
8. 1.3% = 1 $\frac{3}{10}$%
9. 50.5% = 50 $\frac{1}{2}$%
10. 139%
11. 15%
12. 1,202%
13. 1.2% = 1 $\frac{1}{5}$%
14. 30%
15. 25%
16. 124.5% = 124$\frac{1}{2}$ %
17. 1%
18. 73.2% = 73 $\frac{1}{5}$%
19. 520%
20. 505.5% = 505$\frac{1}{2}$ %

ACTIVITY SHEET 3

1. 15%
2. 1007%
3. 1101%
4. 25%
5. 37%
6. 1.5%
7. 6.5%
8. 13%
9. 214%
10. 117%
11. 6%
12. 100.3%
13. 17.5%
14. 362%
15. 151%
16. 300.1%
17. 5%
18. 2%
19. 78%
20. 196%

ACTIVITY SHEET 4

1. .25
2. .31
3. .07
4. .09
5. .11
6. .62
7. .24
8. .19
9. .33
10. .09
11. .12
12. .05
13. .08
14. .98
15. 1.
16. .16
17. .18
18. .52
19. .79
20. .14

ACTIVITY SHEET 5

1. .87
2. .91
3. .24
4. .14
5. .76
6. .51
7. .47
8. .99
9. .64
10. .39
11. .15
12. .45
13. .75
14. .32
15. .22
16. .68
17. .17
18. .26
19. .21
20. .20

ACTIVITY SHEET 6

1. 25%
2. 20%
3. 75%
4. 50%
5. 40%
6. 60%
7. 80%
8. 30%
9. 160%
10. 90%
11. 85%
12. 6%
13. 28%
14. 70%
15. 32%
16. 130%
17. 44%
18. 54%
19. 65%
20. 98%

ACTIVITY SHEET 7

1. 75%
2. 40%
3. 87.5% = $87 \frac{1}{2}\%$
4. 50%
5. 20%
6. 12.5% = $12 \frac{1}{2}\%$
7. 80%
8. 60%
9. 62.5% = $62 \frac{1}{2}\%$
10. 37.5% = $37\frac{1}{2}\%$
11. 75%
12. 55%
13. 52%
14. 34%
15. 170%
16. 50%
17. 6.25% = $6 \frac{1}{4}\%$
18. 95%
19. 36%

20 68.75% = $68 \frac{3}{4}\%$

ACTIVITY SHEET 8

1. $\frac{1}{20}$
2. 1
3. $\frac{1}{10}$
4. $\frac{3}{4}$
5. $\frac{4}{5}$
6. $\frac{2}{5}$
7. $\frac{1}{50}$
8. $\frac{33}{100}$
9. $\frac{1}{4}$
10. $1 \frac{3}{4}$
11. $\frac{3}{10}$
12. $1 \frac{1}{4}$
13. $\frac{1}{500}$
14. 2
15. $\frac{3}{5}$
16. $1 \frac{2}{5}$
17. $1 \frac{3}{4}$

ACTIVITY SHEET 9

1. $\frac{1}{5}$
2. $\frac{3}{20}$
3. $\frac{9}{20}$
4. $\frac{3}{4}$
5. $\frac{13}{20}$
6. $\frac{4}{5}$
7. $\frac{1}{10}$
8. 2
9. $1 \frac{1}{2}$
10. $1 \frac{3}{4}$
11. $\frac{11}{20}$
12. $\frac{3}{5}$
13. $\frac{7}{20}$
14. $\frac{2}{5}$
15. $1 \frac{1}{20}$
16. $1 \frac{1}{10}$
17. $\frac{3}{10}$
18. $\frac{1}{4}$
19. $1 \frac{3}{20}$
20. 3

ACTIVITY SHEET 10

1. 20
2. 10
3. 5
4. 2
5. 45
6. $26 \frac{1}{4}$
7. 2
8. $11 \frac{22}{25}$
9. 49
10. $97 \frac{1}{2}$
11. 112
12. $49 \frac{3}{5}$
13. 360
14. 150
15. 216
16. 105
17. 220
18. 92
19. $11 \frac{1}{4}$
20. $166 \frac{3}{4}$

ACTIVITY SHEET 11

1. 20
2. 0.2
3. 0.2
4. 0.4
5. 36
6. 49
7. 19.8
8. 48.1
9. 363.4
10. 218.79
11. 0.25
12. 12
13. 22
14. 171.5
15. 99
16. 131
17. 0.03
18. 1200
19. 705.6
20. 0.75

ACTIVITY SHEET 12

1. 2.16
2. 11.41
3. 24
4. 57
5. 12
6. 1
7. $24
8. 600
9. 54
10. 78
11. 320
12. $36

ACTIVITY SHEET 13

1. 50%
2. 25%
3. 20%
4. $33\frac{1}{3}\%$
5. 20%
6. $12\frac{1}{2}\%$
7. 5%
8. 50%
9. 1,000%
10. $33\frac{1}{3}\%$
11. $3\frac{1}{3}\%$
12. 20%
13. 300%
14. 7%
15. 125%
16. $3\frac{1}{8}\%$
17. $\frac{1}{5}\%$
18. $83\frac{1}{3}\%$
19. 5%
20. $\frac{1}{5}\%$

ACTIVITY SHEET 14

1. 50%
2. $37\frac{1}{2}\%$ or 37.5%
3. 25%
4. 5%
5. 20%
6. 50%
7. 94%
8. $12\frac{1}{2}\%$ or 12.5%
9. 18%
10. $33\frac{1}{3}\%$
11. 540%
12. 15%

ACTIVITY SHEET 15

1. 25%
2. 25%
3. 25%
4. 20%
5. 80%
6. 25%
7. 25%
8. 37%
9. 10%
10. a. 30%
    b. 35%
    c. 8%
    d. 5%
    e. 12%
    f. 10%

ACTIVITY SHEET 16

1. 20
2. 125
3. 1270
4. 75
5. 100
6. 400
7. 120
8. 16
9. 1200
10. 28
11. 800
12. 12
13. 72
14. 800
15. 800
16. 39
17. 8
18. 6
19. 16
20. 48

ACTIVITY SHEET 17

1. 60
2. 13
3. 90
4. 32
5. 3000
6. 18
7. 45
8. 62
9. $3.00
10. $3000.00
11. $450.00
12. 200

ACTIVITY SHEET 18

1. 140
2. 275
3. 40
4. 50
5. 320
6. 600
7. 3725
8. 1,600
9. 650 ft.
10. 40
11. 16 sq. yd.
12. $2400

ACTIVITY SHEET 19

1. 3
2. 9
3. 10
4. 6
5. $10\frac{1}{2}$ or 10.5
6. 28
7. 44
8. 24

ACTIVITY SHEET 20

1. 15%
2. 26%
3. 5%
4. 75%
5. 15%
6. 25%
7. 35%
8. 110%
9. 75%
10. $.75 = 75%
11. 5%
12. 10%
13. 25%
14. 50%
15. 75%
16. 25%
17. 20%
18. 90%
19. 51%
20. 50%

UNIT VIII

PERCENTS

ANSWERS TO UNIT TEST

PART 1

1. b
2. d
3. e
4. c
5. a

PART 2

A.
1. 37%
2. 62.5 = $62\frac{1}{2}\%$
3. 50.5 = $50\frac{1}{2}\%$
4. 362%
5. 2%

B.
1. .25
2. .11
3. .33
4. .18
5. .79

C.
1. 50%
2. 30%
3. 70%
4. 54%
5. 98%

D.
1. $\frac{1}{20}$
2. $\frac{3}{4}$
3. $\frac{3}{10}$
4. $\frac{3}{5}$
5. $1\frac{3}{4}$

PART 3

A.
1. 5
2. $26\frac{1}{4}$
3. 105
4. 20
5. 218.79

C.
1. 20
2. 400
3. 800
4. 6
5. 3,000

B.
1. 50%
2. $12\frac{1}{2}\%$
3. 50%
4. $\frac{1}{5}\%$
5. $3\frac{1}{8}\%$

ANSWERS TO TEST

UNIT VIII

PERCENTS

PRE/POST TEST

PART 1

Match the terms with their correct definitions by placing the correct letter in the blanks at the left.

_____ 1.	Percentage	a.	a Latin word meaning "a hundred"
_____ 2.	Percent symbol	b.	something divided into a hundred parts
_____ 3.	Per centum	c.	the symbol used to identify percents

PART 2

A. Change the following decimals to percents by moving the decimal point two places to the right.

1. 0.37 = _______% 2. 3.62 = _______%

B. Change the following percents to decimals.

1. 25% = _______ 2. 79% = _______

C. Change each fraction to its percent form.

1. $\frac{2}{4}$ = _______% 2. $\frac{27}{50}$ = _______%

D. Change the following percents to fractions.

1. 5% = _______ 2. 60% = _______

PART 3

A. Find the percentage in the following:

1. 10% of 50 = _______ 2. 20% of 100 = _______

B. Find what percent one number is of another.

1. _______% of 4 = 2 2. 2 is _______% of 64

C. Find the missing number.

1. 30% of _______ = 6 2. 3% of _______ = 90

PERCENTS

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. Base quantity--the number you are finding the percent of
2. Part--the number that is a percent of another number
3. Percentage--Something divided into a hundred parts
4. Percent symbol--the symbol used to identify percents; (%)
5. Per centum--a Latin word meaning "a hundred"

UNIT VIII

PERCENTS

ACTIVITY SHEET 1--FILL IN THE BLANKS

Directions: Using the words listed below, fill in the blanks.

Base quantity
Part
Percentage
Percent symbol
Per centum

1. A Latin word meaning "a hundred" is ____________________.

2. A ____________________ is a number that is a percent of another number.

3. The ____________ ______________ is the number you are finding the percent of.

4. The symbol (%) is the ______________ ______________.

5. Something divided into a hundred parts is a ____________________.

PERCENTS

INFORMATION SHEET 2--WORKING WITH PERCENTS

I. What Is a Percent?

   A. The word percentage comes from a Latin word "per centum" which means "a hundred."

   B. Percent means that something has been divided into a hundred parts.

      1. 15% means 15/100 of something.

      2. 100% means all of something.

      3. 300% means you have tripled something.

II. You Can Change Decimals to Percents

   A. You must move the decimal point two places to the right of its original position.

   B. Add the percent symbol (%).

   EXAMPLE: .14 = 14%

III. You Can Change Percents to Decimals

   A. You must move the decimal point two places to the left of its original position.

   B. Take away the percent symbol.

   C. Add zeros to the left of the number, if needed, before moving the decimal point.

   EXAMPLE: 7% = .07

IV. You Can Change Fractions to Percents

   A. You first divide the denominator into the numerator.

B. Carry the answer to hundredths, unless it comes out even before then.

EXAMPLE: $\frac{2}{3}$ = ?%

```
     .666  =  66.6%
 3 ⌈2.00
    18
     20
     18
      20
      18
       20
```

V. You Can Change Percents to Fractions

A. Use the number of the percent as the numerator.

B. Use 100 as the denominator.

C. Reduce the fraction to the lowest possible terms.

EXAMPLE: 25% = $\frac{25}{100}$ = $\frac{1}{4}$

CHANGING DECIMALS TO PERCENTS

.14 = 14%

Move the decimal point
two places to the right--
add the percent symbol

CHANGING PERCENTS TO DECIMALS

6% **becomes** **.06**

Move the decimal point two places to the left -

take away the percent symbol – add zeros to the left of the number

if you need to before moving the decimal.

CHANGING FRACTIONS TO PERCENT

$$\frac{3}{4}$$

Divide the denominator into the numerator

$$\begin{array}{rl} & \underline{.75 = 75}\% \\ 4 & \overline{)\,3.00} \\ & \underline{28} \\ & \;\;20 \end{array}$$

(Carry the answer to hundredths unless it comes out even before then)

CHANGING PERCENT TO FRACTIONS

25%

- Use the number of the percent as your numerator
- Use 100 as your denominator
- Reduce the fraction to the lowest possible terms

$$^{25}/_{100} = {}^{1}/_{4}$$

PERCENTS

ACTIVITY SHEET 3--CHANGING DECIMALS TO PERCENTS

Directions: Change the following decimals to percents by moving the decimal point two places to the right and adding the percent symbol.

EXAMPLE: .12 = 12%

1. 0.15 = __________%
2. 10.07 = __________%
3. 11.01 = __________%
4. 0.25 = __________%
5. 0.37 = __________%
6. 0.015 = __________%
7. 0.065 = __________%
8. 0.13 = __________%
9. 2.14 = __________%
10. 1.17 = __________%
11. 0.06 = __________%
12. 1.003 = __________%
13. 0.175 = __________%
14. 3.62 = __________%
15. 1.51 = __________%
16. 3.001 = __________%
17. 0.05 = __________%
18. 0.02 = __________%
19. 0.78 = __________%
20. 1.96 = __________%

ACTIVITY

PERCENTS

ACTIVITY SHEET 4--CHANGING PERCENTS TO DECIMALS

Directions: Change the following percents to decimals.

EXAMPLE: 6% = .06

1. 25% = ________
2. 31% = ________
3. 7% = ________
4. 9% = ________
5. 11% = ________
6. 62% = ________
7. 24% = ________
8. 19% = ________
9. 33% = ________
10. 9% = ________
11. 12% = ________
12. 5% = ________
13. 8% = ________
14. 98% = ________
15. 100% = ________
16. 16% = ________
17. 18% = ________
18. 52% = ________
19. 79% = ________
20. 14% = ________

PERCENTS

ACTIVITY SHEET 5--CHANGING PERCENTS TO DECIMALS

Directions: Change the following percents to decimals.

EXAMPLE: 10% = .10

1. 87% = __________
2. 91% = __________
3. 24% = __________
4. 14% = __________
5. 76% = __________
6. 51% = __________
7. 47% = __________
8. 99% = __________
9. 64% = __________
10. 39% = __________
11. 15% = __________
12. 45% = __________
13. 75% = __________
14. 32% = __________
15. 22% = __________
16. 68% = __________
17. 17% = __________
18. 26% = __________
19. 21% = __________
20. 20% = __________

UNIT VIII

PERCENTS

ACTIVITY SHEET 6--CHANGING FRACTIONS TO PERCENTS

Directions: Change each fraction to its percent form.

1. $\frac{1}{4}$ = ________
2. $\frac{1}{5}$ = ________
3. $\frac{3}{4}$ = ________
4. $\frac{2}{4}$ = ________
5. $\frac{2}{5}$ = ________
6. $\frac{3}{5}$ = ________
7. $\frac{4}{5}$ = ________
8. $\frac{3}{10}$ = ________
9. $\frac{8}{5}$ = ________
10. $\frac{9}{10}$ = ________
11. $\frac{17}{20}$ = ________
12. $\frac{3}{50}$ = ________
13. $\frac{7}{25}$ = ________
14. $\frac{7}{10}$ = ________
15. $\frac{8}{25}$ = ________
16. $\frac{13}{10}$ = ________
17. $\frac{11}{25}$ = ________
18. $\frac{27}{50}$ = ________
19. $\frac{13}{20}$ = ________
20. $\frac{49}{50}$ = ________

UNIT VIII

PERCENTS

ACTIVITY SHEET 7--CHANGING FRACTIONS TO PERCENTS--DIVISION METHOD

A fraction can be written as a percent by dividing the numerator by its denominator and carrying the division to an end. The quotient must be multiplied by 100 to change it to its equal as a percent. This may be done by multiplication, or by moving the decimal point two places to the right.

Problem: Write $\frac{1}{4}$ as a percent.

```
                    .25
Solution:    =  4 ⌐1.00       .25
                   8        x 100
                  20        25.00   =  25%
                  20
```

or .25 x 100 = 25. = 25%

(Moving the decimal point two places to the right is automatic multiplication of any number by 100.)

Directions: Change each fraction to its percent form.

1. $\frac{3}{4}$ = __________

2. $\frac{2}{5}$ = __________

3. $\frac{7}{8}$ = __________

4. $\frac{2}{4}$ = __________

5. $\frac{1}{5}$ = __________

6. $\frac{1}{8}$ = __________

7. $\frac{4}{5}$ = __________

8. $\frac{3}{5}$ = __________

9. $\frac{5}{8}$ = __________

10. $\frac{3}{8}$ = __________

11. $\frac{9}{12}$ = __________

12. $\frac{11}{20}$ = __________

13. $\frac{13}{25}$ = __________

14. $\frac{17}{50}$ = __________

15. $\frac{17}{10}$ = __________

16. $\frac{6}{12}$ = __________

17. $\frac{1}{16}$ = __________

18. $\frac{19}{20}$ = __________

19. $\frac{9}{25}$ = __________

20. $\frac{11}{16}$ = __________

ACTIVITY

PERCENTS

ACTIVITY SHEET 8--CHANGING PERCENTS TO FRACTIONS

Directions: To change a percent to an equal fraction, write the percent as the numerator of a fraction whose denominator is 100 and reduce to lowest terms.

EXAMPLE: $50\% = \frac{50}{100} = \underline{\ \frac{1}{2}\ }$

1. 5% = ________

2. 100% = ________

3. 10% = ________

4. 75% = ________

5. 80% = ________

6. 40% = ________

7. 2% = ________

8. 33% = ________

9. 25% = ________

Change to fractions or mixed numbers in lowest terms.

EXAMPLE: $150\% = \frac{150}{100} = 1\frac{50}{100} = \underline{\ 1\frac{1}{2}\ }$

10. 175% = ________

11. 30% = ________

12. 125% = ________

EXAMPLE: $\frac{1}{2}\% = .5\% = \frac{.5}{100} = \frac{.5\text{x}10}{100\text{x}10} = \frac{5}{1000} = \underline{\ \frac{1}{200}\ }$

13. $\frac{1}{5}\%$ = ________

14. 200% = ________

15. 60% = ________

16. 140% = ________

17. 175% = ________

PERCENTS

ACTIVITY SHEET 9--CHANGING PERCENTS TO FRACTIONS

Directions: Change the following percents to fractions.

EXAMPLE: $25\% = \frac{25}{100} = \frac{1}{4}$

1. 20% = __________
2. 15% = __________
3. 45% = __________
4. 75% = __________
5. 65% = __________
6. 80% = __________
7. 10% = __________
8. 200% = __________
9. 150% = __________
10. 175% = __________
11. 55% = __________
12. 60% = __________
13. 35% = __________
14. 40% = __________
15. 105% = __________
16. 110% = __________
17. 30% = __________
18. 25% = __________
19. 115% = __________
20. 300% = __________

ACTIVITY

PERCENTS

INFORMATION SHEET 3--USING PERCENTS

I. How Do You Find the Percent of a Quantity?

A. Change the percent to a decimal (see Information Sheet 2).

B. Multiply the number in the problem by the decimal.

C. The product you get is the percent of the original quantity.

EXAMPLE: What is 35% of 208?

```
  208
x .35
 1040
 624
72.80    35% of 208 is 72.80
```

II. How Do You Find What Percent One Quantity Is of Another?

A. Decide which number is the "base quantity" in your problem.

B. Decide which number is "part" of the base number.

C. Place the two numbers in the form of a fraction, with the base as the denominator.

D. Divide the base number into the part to get a decimal number.

E. Change the decimal number to a percent.

EXAMPLE: What percent is 17 of 35?

$\frac{17}{35} = \frac{\text{part}}{\text{base}}$

```
        .48 = .49 = 49%
  35 ⌈17.00
      140
       300
       280
        20
```

17 is 49% of 35

III. How Do You Find a Number When You Know a Percent of It?

A. Change the percent to a decimal or a fraction.

B. Divide the number by the decimal or fraction.

EXAMPLE: 52% of what number is 78?

52% = .52

$$\begin{array}{r} 150. \\ .52\,\overline{)\,78.00} \\ \underline{52} \\ 260 \\ \underline{260} \end{array}$$

52% of 150 is 78

PERCENT OF A QUANTITY

15% of 75 = ?

Change the the percent to a decimal ... **15% = .15**

Multiply the number in the problem by the decimal.

$$\begin{array}{r} 75 \\ \underline{x.15} \\ 375 \\ \underline{75} \\ 11.25 \end{array}$$

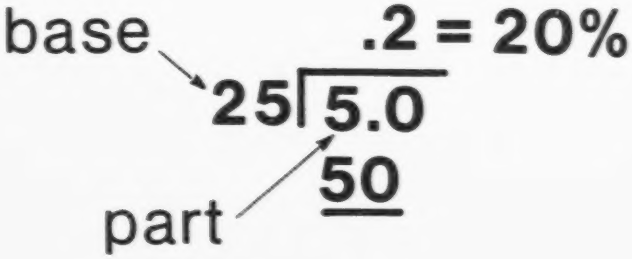
15% of 75 = 11.25

WHAT PERCENT IS ONE NUMBER OF ANOTHER?

What percent is

5 of 25?

$$\frac{5}{25}\begin{array}{l}\text{-part}\\ \text{-base}\end{array}$$



$$\begin{array}{r} .2 = 20\% \\ 25\overline{)5.0} \\ \underline{50} \end{array}$$

5 is 20% of 25

FINDING A NUMBER WHEN YOU KNOW A PERCENT

20% of what number is **80?**

- CHANGE THE PERCENT TO A DECIMAL OR FRACTION

20% = .20

- DIVIDE THE NUMBER BY THE DECIMAL OR FRACTION

$$\begin{array}{r} 400. \\ .20\overline{)80.00} \\ \underline{80} \end{array}$$

20% of **400** is **80**

PERCENTS

ACTIVITY SHEET 10--PERCENTAGE OF A NUMBER

Directions: Find the percentages in the following problems.

1. 20% of 100 = __________

2. 25% of 40 = __________

3. 10% of 50 = __________

4. 5% of 40 = __________

5. 75% of 60 = __________

6. 35% of 75 = __________

7. $12\frac{1}{2}$% of 16 = __________

8. $16\frac{1}{2}$% of 72 = __________

9. $87\frac{1}{2}$% of 56 = __________

10. 65% of 150 = __________

11. 56% of 200 = __________

12. 8% of 620 = __________

13. 120% of 300 = __________

14. 250% of 60 = __________

15. 300% of 72 = __________

16. 150% of 70 = __________

17. 400% of 55 = __________

18. 100% of 92 = __________

19. 150% of 7.5 = __________

20. 230% of 72.5 = __________

UNIT VIII

PERCENTS

ACTIVITY SHEET 11--PERCENTAGE OF A NUMBER

Directions: Find the percentages in the following problems.

EXAMPLE: 3% of 90 = .03 x 90 = 2.70 = 2.7

1. 20% of 100 = __________
2. 2% of 10 = __________
3. 1% of 20 = __________
4. 4% of 10 = __________
5. 45% of 80 = __________
6. 70% of 70 = __________
7. 66% Of 30 = __________
8. 74% of 65 = __________
9. 92% of 395 = __________
10. 33% of 663 = __________
11. $\frac{1}{2}$% of 50 = __________
12. $12\frac{1}{2}$% of 96 = __________
13. 110% of 20 = __________
14. 175% of 98 = __________
15. 300% of 33 = __________
16. 200% of 65.5 = __________
17. $\frac{1}{5}$% of 15 = __________
18. 150% of 800 = __________
19. 210% of 336 = __________
20. $1\frac{1}{2}$% of 50 = __________

PERCENTS

ACTIVITY SHEET 12--FINDING THE PERCENTAGE OF A NUMBER

Directions: Answer each of the following questions.

1. 3% of 72 is what number? _________

2. 7% of 163 is what number? _________

3. What number is 25% of 96? _________

4. What number is $37\frac{1}{2}$% of 152? _________

5. There are 20 pupils in a class. Sixty percent of the pupils are boys. How many are boys? _________

6. One day, 5% of the 20 pupils in Mrs. Moore's class made perfect scores on a spelling test. How many made perfect scores? _________

7. Mr. McGill bought a new saw, regularly selling for $120, at a sale and saved 20%. How much did he save? _________

8. The number of people at the game this week was 75% of what it was last week. Last week there were 800 people at the game. How many people were at the game this week? _________

9. Thirty-six percent of 150 tickets have been sold. How many tickets have been sold? _________

10. Last week, there was a lot of illness. On one day only 65% of the 120 pupils in Podunk School were present. How many pupils were present? _________

11. Four hundred square feet of tile have been ordered for tiling a room. If twenty percent of the amount purchased is allowed for waste and matching, how large an area can be tiled? _________

12. An 8-track player originally sold for $60. Jim bought it for 40% off. What did he pay for the player? _________

PERCENTS

ACTIVITY SHEET 13--FINDING THE PERCENT

Directions: Find what percent one number is of another.

1. _______% of 4 = 2
2. _______% of 8 = 2
3. _______% of 50 = 10
4. _______% of 45 = 15
5. _______% of 7 = 1.4
6. _______% of 72 = 9
7. _______% of 600 = 30
8. _______% of 5 = 2
9. _______% of 24.5 = 245
10. 12 is _______% of 36
11. 1.2 is _______% of 36
12. 3 is _______% of 15
13. 81 is _______% of 27
14. 42 is _______% of 600
15. 5 is _______% of 4
16. 2 is _______% of 64
17. .03 is _______% of 15
18. 40 is _______% of 48
19. .25 is _______% of 5
20. .07 is _______% of 35

ACTIVITY

PERCENTS

ACTIVITY SHEET 14--FINDING WHAT PERCENT ONE NUMBER IS OF ANOTHER

Directions: Answer each of the following questions.

1. 8 is what percent of 16? __________
2. 60 is what percent of 160? __________
3. What percent of 32 is 8? __________
4. $40 is what percent of $800? __________
5. $12 is what percent of $60? __________
6. A team played 50 games and won 25. What percent of the games did they win? __________
7. Bill answered 47 questions correctly on a test of 50 questions. What percent of the questions did he answer correctly? __________
8. In a class of 48 students, six were absent. What percent of the class was absent? __________
9. A store charged $240 for a refrigerator and made a profit of $43.20. What was the percent of profit? __________
10. A coffee maker priced at $30 is reduced $10 in price. What is the percent of discount? __________
11. A quart of milk cost 10 cents in 1940. If a quart of milk costs 54 cents today, what is the percent of increase in price? __________
12. Mary bought a typewriter for $80 and sold it for $68. What is the percent of decrease? __________

UNIT VIII

PERCENTS

ACTIVITY SHEET 15--FINDING WHAT PERCENT ONE NUMBER IS OF ANOTHER

Directions: Fill in the missing value for the following.

1. ________% of 64 is 16.
2. 9 is ________% of 36.
3. ________% of 28 is 7.
4. 5 is ________% of 25.

Read each of the following problems carefully and answer them.

5. Jim sold his motorcycle for $300. This was ________% of the $375 he paid for it.
6. A vacation of 3 months is what percent of a year? ________
7. Madge bought a hat marked $3.00 for $2.25. What percent did she save? ______
8. By paying cash, Jim bought an 8-track recorder and player for $94.50. Its original price was $150.00. What was the percent of discount? __________
9. Mr. Terrell gets an annual salary of $45,000. His family spends $4,500 per year for food. What percent of his salary should they budget for food? _____
10. Dorinda made the following circle graph to show her father how she spent her allowance. Complete the graph by writing in each percent.

	Item	Amount Spent	
a.	Movie	$1.50	_____
b.	Cosmetics	1.75	_____
c.	Cokes	.40	_____
d.	Stamps	.25	_____
e.	Magazines	.60	_____
f.	Gifts	.50	_____
		$5.00	

ACTIVITY

UNIT VIII

PERCENTS

ACTIVITY SHEET 16--FINDING THE MISSING NUMBER

Directions: Find the missing numbers in the following problems.

1. 30% of ________ = 6
2. 20% of ________ = 25
3. 10% of ________ = 127
4. 80% of ________ = 60
5. 51% of ________ = 51
6. 13% of ________ = 52
7. $12\frac{1}{2}\%$ of ________ = 15
8. 75% of ________ = 12
9. 18% of ________ = 216
10. 200% of ________ = 56
11. 1% of ________ = 8
12. $33\frac{1}{3}\%$ of ________ = 4
13. $87\frac{1}{2}\%$ of ________ = 63
14. .25% of ________ = 2
15. $\frac{1}{2}\%$ of ________ = 4
16. $66\frac{2}{3}\%$ of ________ = 26
17. 150% of ________ = 12
18. 300% of ________ = 18
19. 450% of ________ = 72
20. 37.5% of ________ = 18

UNIT VIII

PERCENTS

ACTIVITY SHEET 17--FINDING A NUMBER WHEN A PERCENT OF IT IS GIVEN

Directions: Find the missing number.

1. 75% of ________ = 45
2. 500% of ________ = 65
3. 50% of ________ = 45
4. 40% of ________ = 12.8
5. 3% of ________ = 90
6. 400% of ________ = 72
7. 60% of ________ = 27
8. 57% of ________ = 35.34
9. 30% of ________ = $0.90
10. $\frac{1}{2}$% of ________ = $15
11. Fred has $360 in the savings bank now. This is 20% less than he had in the bank a year ago. How much were his savings a year ago? __________
12. Mr. Jones sold 75% of his farm, and the number of acres sold was 150. How many acres did he originally own? __________

PERCENTS

ACTIVITY SHEET 18--PROBLEM SOLVING: FINDING A NUMBER WHEN A PERCENT OF IT IS GIVEN

Directions: Read and answer the following questions.

1. 10% of what number is 14? __________

2. 8% of what number is 22? __________

3. 40% of what number is 16? __________

4. 6 is 12% of what number? __________

5. 160 is 50% of what number? __________

6. A beef dressed out at 420 pounds. If 30% of the weight was lost in processing, what was the original weight of the beef? __________

7. If 12% is allowed for waste in transporting strawberries, how many did you have originally with 3,278 quarts now available for sale? __________

8. A man sold 320 acres of land. This was 20% of his entire farm. How many acres were in the entire farm? __________

9. A carpenter built a house using 598 board feet of lumber. If eight percent of the lumber was lost in cutting, how much lumber did he/she have originally? __________

10. A ball team won 38 games, which was 95% of their scheduled games. How many games were on their schedule? __________

11. The rug in the living room contains 12 square yards. It covers 75% of the floor. How many square yards of floor surface are there? __________

12. Pat Jones paid $2,100 for a "demonstrator" new car with full warranty. He was allowed a 12$\frac{1}{2}$ discount because it had been driven 4,800 miles. What was the original price of the car? __________

PERCENTS

ACTIVITY SHEET 19--MULTIPLICATION: FRACTION, DECIMAL, PERCENT

Directions: Write each of the following as a multiplication problem and solve.

EXAMPLE: $\frac{1}{2}$ of 6 = $\frac{1}{2} \times \frac{6}{1}$ = = 3

1. $\frac{1}{3}$ of 9 = __________

2. $\frac{3}{4}$ of 12 = __________

3. $\frac{2}{3}$ of 15 = __________

EXAMPLE: 15% of 30 = $\frac{15}{100} \times \frac{30}{1}$ = $\frac{450}{100}$ = $4\frac{1}{2}$

4. 20% of 30 = __________

5. 50% of 21 = __________

6. $87\frac{1}{2}$% of 32 = __________

7. 40% of 110 = __________

8. 150% of 16 = __________

ACTIVITY

PERCENTS

ACTIVITY SHEET 20--CHANGING MONEY TO PERCENT

Directions: Change each of the following to parts (100ths) of a dollar, perform any indicated operation, and write as a percent of a dollar.

EXAMPLE I: a penny = 1¢ = $\frac{1}{100}$ = 1% of a dollar

EXAMPLE II: a nickel = 5¢ = $\frac{5}{100} + \frac{5}{100}$ = 10% of a dollar

1. 5¢ + 10¢ = ________% of a dollar

2. a penny + a quarter = ________% of a dollar

3. a dime - a nickel = ________% of a dollar

4. a half dollar + a quarter = ________% of a dollar

5. a quarter - a dime = ________% of a dollar

6. a half dollar - a quarter = ________% of a dollar

7. a dime + a quarter = ________% of a dollar

8. a dollar + a dime = ________% of a dollar

9. a dollar - a quarter = ________% of a dollar

10. \$2.00 - \$1.25 = ________% of a dollar

11. a nickel = ________% of a dollar

12. a dime = ________% of a dollar

13. a quarter = ________% of a dollar

14. a half dollar = ________% of a dollar

15. 3 quarters = ________% of a dollar

16. 5 nickels = ________% of a dollar

17. a dime + a dime = ________% of a dollar

18. a dollar - a dime = ________% of a dollar

19. a penny + a half dollar = ________% of a dollar

20. a dollar - a half dollar = ________% of a dollar

UNIT VIII

PERCENTS

UNIT TEST--PART 1

Match the terms with their definitions by placing the correct letter in the blanks at the left.

_____ 1. Base quantity

_____ 2. Part

_____ 3. Percentage

_____ 4. Percent symbol

_____ 5. Per centum

a. a Latin word meaning "a hundred"

b. the number you are finding the percent of

c. the symbol used to identify percents

d. the number that is a percent of another number

e. something divided into a hundred parts

TEST

UNIT VIII

PERCENTS

UNIT TEST--PART 2

A. Change the following decimals to percents by moving the decimal point two places to the right and adding the percent symbol.

1. 0.37 = ________%
2. 0.625 = ________%
3. .505 = ________%
4. 3.62 = ________%
5. 0.02 = ________%

B. Change the following percents to decimals.

1. 25% = ________
2. 11% = ________
3. 33% = ________
4. 18% = ________
5. 79% = ________

C. Change each fraction to its percent form.

1. $\frac{2}{4}$ = __________
2. $\frac{3}{10}$ = __________
3. $\frac{7}{10}$ = __________
4. $\frac{27}{50}$ = __________
5. $\frac{49}{50}$ = __________

TEST

D. Change the following percents to fractions.

1. 5% = ________
2. 75% = ________
3. 30% = ________
4. 60% = ________
5. 175% = ________

PERCENTS

UNIT TEST--PART 3

A. Find the percentage in the following.

1. 10% of 50 = ________
2. 35% of 75 = ________
3. 150% of 70 = ________
4. 20% of 100 = ________
5. 33% of 663 = ________

B. Find what percent one number is of another.

1. ________% of 4 = 2
2. ________% of 72 = 9
3. ________% of 5 is $2\frac{1}{2}$
4. .03 is ________% of 15
5. 2 is ________% of 64

C. Find the missing number.

1. 30% of ________ = 6
2. 13% of ________ = 52
3. $\frac{1}{2}$% of ________ = 4
4. 300% of ________ = 18
5. 3% of ________ = 90

UNIT IX

MEASUREMENT

UNIT OBJECTIVE

After completion of this unit, the student will be able to use measurement in working math problems. This knowledge will be evidenced through demonstration and by successfully completing the unit test.

SPECIFIC OBJECTIVES

In completing this unit of instruction, the student will:

1. Identify terms and definitions associated with measurement
2. Recognize the need for standard measuring devices
3. Recognize standard measuring devices
4. Select the proper measuring instrument appropriate to the task of measuring an object
5. Identify measuring units in English and metric systems
6. State the relationship between units in the English system and between units in the metric system
7. Measure given objects by using English/metric system
8. Convert measurements from one unit to another within a given system
9. Identify and name a circle, a square, a triangle, a rectangle, a rhombus, a parallelogram, and a trapezoid
10. Identify and construct representations of lines, angles, planes, and right angles
11. Identify appropriate uses of units of length, area, weight, and temperature
12. Solve word problems involving feet and inches
13. Solve word problems involving standard units of weight

UNIT IX

MEASUREMENT

NOTES TO THE INSTRUCTOR

I. Objective Sheet

   A. Discuss the unit objective with the students.

   B. Discuss each specific objective with the students.

   C. Have the students complete the objectives in a sequence best suited to your classroom.

   D. Add any objectives necessary to meet fully the needs of the unit and the student.

II. Pre/Post Test

   A. The Pre/Post test may be used to determine students' knowledge of information prior to beginning the unit.

   B. The Pre/Post test is divided into parts to correspond with each Information Sheet.

      1. The student may not need to cover each Information Sheet.

      2. The teacher may use the test to determine the area of information with which the student may need help.

   C. The Pre/Post test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

   A. INFORMATION SHEET 1--TERMS AND DEFINITIONS

      1. Stress to the students the importance of understanding the terms used in measurement.

      2. Use ACTIVITY SHEET 1--MATCHING TERMS WITH DEFINITIONS to meet fully the objectives of this unit.

      3. Show TM-1--MEASUREMENT DEVICES to reinforce this area of information.

   B. INFORMATION SHEET 2--STANDARD MEASURING DEVICES

      1. Discuss the history of measurement.

      2. Show TM-2--MEASUREMENT to reinforce this area of information.

      3. Use ACTIVITY SHEET 2--MEASUREMENT QUESTIONS to meet fully the objectives of this unit.

C. INFORMATION SHEET 3--UNITS OF MEASUREMENT

1. Discuss the English measurement system.
    a. Explain the units used in linear measurement.
    b. Show TM-3--LINEAR MEASUREMENT to reinforce this area of information.
    c. Explain the units used in weight measurement.
    d. Show TM-4--WEIGHT MEASUREMENT to reinforce this area of information.
    e. Explain the units used in liquid measurement.
    f. Show TM-5--LIQUID MEASUREMENT to reinforce this area of information.
2. Discuss the metric measurement system.
    a. Explain the units used in metric linear measurement.
    b. Show TM-6--METRIC LINEAR MEASUREMENT to reinforce this area of information.
    c. Explain the units used in metric weight and mass measurement.
    d. Show TM-7--METRIC WEIGHT AND MASS MEASUREMENT to reinforce this area of information.
    e. Explain the units used in metric capacity or liquid measurement.
    f. Show TM-8--METRIC CAPACITY OR LIQUID MEASUREMENT to reinforce this area of information.
3. Use the following Activity Sheets to meet fully the objectives of this unit.
    a. ACTIVITY SHEET 3--MAKING A RULER
    b. ACTIVITY SHEET 4--CONVERTING MEASURES
    c. ACTIVITY SHEET 5--CONVERTING MEASURES
    d. ACTIVITY SHEET 6--COUNTING MEASURES

D. INFORMATION SHEET 4--IDENTIFYING GEOMETRIC FIGURES

1. Discuss the definition of a geometric figure.
    a. Discuss the definition of a circle.
    b. Discuss the definition of a rectangle.
    c. Discuss the definition of a parallelogram.

        d. Discuss the definition of a rhombus.
        e. Discuss the definition of a square.
        f. Discuss the definition of a trapezoid.
        g. Discuss the definition of a triangle.

    2. Discuss how geometric figures can be recognized.

    3. Show the following TM's to reinforce this area of information.

        a. TM-9--CIRCLE
        b. TM-10--RECTANGLE
        c. TM-11--PARALLELOGRAM
        d. TM-12--RHOMBUS
        e. TM-13--SQUARE
        f. TM-14--TRAPEZOID
        g. TM-15--TRIANGLE

    4. Use the following Activity Sheets to meet fully the objectives of this unit.

        a. ACTIVITY SHEET 7--RECOGNIZING GEOMETRIC FIGURES
        b. ACTIVITY SHEET 8--IDENTIFYING GEOMETRIC FIGURES

E. INFORMATION SHEET 5--GEOMETRIC LINES AND ANGLES

    1. Discuss the different types of geometric lines.

    2. Show the following TM's to reinforce this area of information.

        a. TM-16--HORIZONTAL LINES
        b. TM-17--OBLIQUE LINES
        c. TM-18--PARALLEL LINES
        d. TM-19--PERPENDICULAR LINES
        e. TM-20--LINE SEGMENT
        f. TM-21--VERTICAL LINES

    3. Use the following Activity Sheets to meet fully the objectives of this unit.

        a. ACTIVITY SHEET 9--LINES
        b. ACTIVITY SHEET 10--LINES AND SEGMENTS

   c. ACTIVITY SHEET 11--IDENTIFYING LINES

4. Discuss how angles are formed.

5. Show TM-22--ANGLES to reinforce this area of information.

6. Discuss how angles are measured.

7. Show TM-23--THE PROTRACTOR to reinforce this area of information.

8. Use Activity Sheet 12--ANGLES to meet fully the objectives of this unit.

F. INFORMATION SHEET 6--HOW ARE MEASUREMENTS USED?

1. Discuss how to measure length.

2. Use the following Activity Sheets to meet fully the objectives of this unit.

   a. ACTIVITY SHEET 13--MEASURING LINE SEGMENTS

   b. ACTIVITY SHEET 14--MEASURING: MILLIMETERS AND CENTIMETERS

   c. ACTIVITY SHEET 15--MEASURING: INCHES/CENTIMETERS

   d. ACTIVITY SHEET 16--MEASURING LENGTH

3. Discuss how items are weighted.

4. Use the following Activity Sheets to meet fully the objectives of this unit.

   a. ACTIVITY SHEET 17--WEIGHT: ADDITION OR SUBTRACTION

   b. ACTIVITY SHEET 18--WEIGHT: MULTIPLICATION

   c. ACTIVITY SHEET 19--WEIGHT: PROBLEMS

5. Discuss how to work with angles.

6. Use the following Activity Sheets to meet fully the objectives of this unit.

   a. ACTIVITY SHEET 20--ANGLES: DRAWING AND MEASURING

   b. ACTIVITY SHEET 21--GAME: ANGLES

   c. ACTIVITY SHEET 22--DRAWING ANGLES

   d. ACTIVITY SHEET 23--MEASURING ANGLES

   e. ACTIVITY SHEET 24--ANGLE MEASURE

7. Discuss how to find the circumference of a circle.

8. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 25--CIRCUMFERENCE

    b. ACTIVITY SHEET 26--CIRCLES

9. Discuss how the perimeter of a figure is found.

10. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 27--PERIMETER

    b. ACTIVITY SHEET 28--PERIMETER: METRIC UNITS

    c. ACTIVITY SHEET 29--PERIMETER: SQUARES AND RECTANGLES

    d. ACTIVITY SHEET 30--PERIMETER: MEASURES GIVEN

    e. ACTIVITY SHEET 31--PERIMETER: DIMENSIONS GIVEN

11. Discuss how the area of geometric figures is found.

12. Show the following TM's to reinforce this area of information.

    a. TM-24--AREA OF A RECTANGLE

    b. TM-25--AREA OF A PARALLELOGRAM

    c. TM-26--AREA OF A TRIANGLE

    d. TM-27--AREA OF A CIRCLE

    e. TM-28--AREA OF A SQUARE

13. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 32--AREA OF A SQUARE

    b. ACTIVITY SHEET 33--AREA OF A RECTANGLE

    c. ACTIVITY SHEET 34--AREA OF PARALLELOGRAMS

    d. ACTIVITY SHEET 35--AREA OF A TRIANGLE

    e. ACTIVITY SHEET 36--AREA OF A CIRCLE

    f. ACTIVITY SHEET 37--CIRCLES

    g. ACTIVITY SHEET 38--GEOMETRIC FIGURES

    h. ACTIVITY SHEET 39--PROBLEMS

14. Discuss how the volume of geometric figures is found.

15. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 40--VOLUME BY COUNTING

    b. ACTIVITY SHEET 41--CONSTRUCTION

    c. ACTIVITY SHEET 42--VOLUME: BY COUNTING

    d. ACTIVITY SHEET 43--VOLUME: RECTANGULAR SOLIDS

    e. ACTIVITY SHEET 44--VOLUME: CYLINDERS

    f. ACTIVITY SHEET 45--COMPARING ENGLISH AND METRIC VOLUME UNITS

    g. ACTIVITY SHEET 46--VOLUME: CHANGING MEASURES

G. INFORMATION SHEET 7--TEMPERATURE

1. Discuss the two types of thermometers used.

2. Explain how one temperature type is changed to another.

3. Show TM-29--TEMPERATURE to reinforce this area of information.

4. Use the following Activity Sheets to meet fully the objectives of this unit.

    a. ACTIVITY SHEET 47--TEMPERATURE

    b. ACTIVITY SHEET 48--FAHRENHEIT AND CENTIGRADE

    c. ACTIVITY SHEET 49--TEMPERATURE

IV. Answers to Pre/Post Test

A. Answers are based on total information covered in this unit.

B. Right or wrong answers may assist the teacher in discovering individual student weaknesses.

V. Answers to Activity Sheets

A. Some of the Activity Sheets will vary according to training and should be graded individually.

B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

A. The Unit Test is divided into seven parts.

1. Each part covers one Information Sheet.

2. Each part uses various methods of testing.

B. Various approaches may be used in testing.

  1. Give each part of the test after the student has completed the information in one information area or sheet.

  2. Give the entire test upon completion of all the Information and Activity Sheets.

  3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

C. Add test parts corresponding to any information areas or sheets added to the unit.

VII. Answers to Unit Tests

A. Answers are based on total information covered in the unit.

B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

A. Audiovision, Inc. Think Metric. Cincinnati, Ohio: South-Western Publishing Co., 1975.

B. Gerardi, William J. et al. Key Ideas in Mathematics 2. New York: Harcourt Brace Jovanovich, Inc., 1971.

C. Hobbs, Glen M. Practical Mathematics. Alsip, Illinois: American Technical Publishers, Ins., 1972.

D. Spann, Margaret. Coordinated Vocational Education and Training - Math. Stillwater, Oklahoma: State Department of Vocational and Technical Education, 1972.

UNIT IX

MEASUREMENT

ANSWERS TO PRE/POST TEST

PART 1

1. e
2. a
3. d
4. b
5. c

PART 2

1. By the use of his foot or distance from elbow to finger tips
2. Cubit
3. So that measurements will not vary
4. So that it will be easier and measurements will be more accurate

PART 3

1. a. 168 in.
   b. 264 in.
   c. 9 ft.
   d. 150 yds.

2. a. 0.063 meters
   b. 8.8 cm.

3. a. 3 lb. 6 oz.
   b. 4 lb. 3 oz.

4. a. 2,000,000 mg.
   b. 17,000 mg.

PART 4

1. rectangle
2. trapezoid
3. parallelogram
4. triangle
5. square
6. rhombus
7. circle

PART 5

a. perpendicular
b. horizontal
c. parallel
d. vertical
e. oblique
f. segment

PART 6

1. 4 in.
2. a. 9 lb. 14 oz.
   b. 8 lb. 8 oz.
3. 43.96 in.
4. 6 in.
5. 9 sq. ft.
6. 24 cubic inches

PART 7

1. 33°F
2. 10°

ANSWERS TO TEST

UNIT IX

MEASUREMENT

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1

1. j
2. m
3. cc
4. a
5. k
6. e
7. z
8. t
9. q
10. bb
11. c
12. f
13. aa
14. s
15. v
16. g
17. l
18. n
19. w
20. r
21. y
22. i
23. d
24. x
25. b
26. h
27. o
28. u
29. p

ACTIVITY SHEET 2

1. By the use of his foot or distance from elbow to finger tips
2. Cubit
3. So that measurements will not vary
4. Inch
5. Yardstick
6. Ruler
7. Tape measure
8. Ruler
9. Cloth tape measure
10. So that it will be easier and measurements will be more accurate

ACTIVITY SHEET 3

1. Evaluated to the satisfaction of the instructor.

2. 8, 16
3. 4, 8
4. 2, 4
5. 1, 2
6. 2
7. 2, 4
8. 6
9. 2, 4, 8
10. 10
11. 6, 12
12. 14
13. 2, 4, 8, 16
14. 3
15. 8
16. 16
17. 16
18. $\frac{7}{16}$
19. $\frac{1}{2}$
20. $\frac{7}{8}$
21. equal
22. $2\frac{3}{4}$
23. $\frac{10}{8}$
24. $\frac{21}{8}$
25. 2, 1
26. 3
27. 10
28. $3\frac{1}{4}$

29-30 Evaluated to the satisfaction of the instructor.

ACTIVITY SHEET 4

1. 168"
2. 69 ft.
3. 6 yds.
4. 264"
5. $7\frac{1}{3}$ yds.
6. 66 ft.
7. 792"
8. $1\frac{5}{6}$ ft.
9. 9 ft.
10. 3 yds.
11. 504 ft.
12. 14 ft.
13. $4\frac{2}{3}$ yds.
14. 2 yds.
15. $7\frac{1}{2}$ ft.
16. $2\frac{1}{2}$ yds.
17. 48 yds.
18. 54 ft.
19. 34 yds.
20. 16 yds.
21. $3\frac{1}{2}$ yds.
22. 42 yds.
23. $4\frac{2}{3}$ yds.
24. 14 yds.
25. $6\frac{1}{2}$'
26. 1188"
27. 576"
28. $62\frac{1}{2}$ ft.
29. 150 yds.
30. 80 yds.

ACTIVITY SHEET 5

1. 0.063
2. 0.1
3. 0.98
4. 8.8
5. 1500
6. 0.75
7. 0.078
8. 780
9. 350
10. 0.85

ACTIVITY SHEET 6

1. a. 41 oz.
   b. 101 oz.
   c. 392 oz.
   d. 251 oz.
   e. 314 oz.
2. a. 3 lb. 6 oz.
   b. 4 lb. 3 oz.
   c. 3 lb. 9 oz.
   d. 5 lb. 3 oz.
   e. 4 lb. 15 oz.
3. a. 3T. 270 lb.
   b. 4T. 750 lb.
   c. 4T. 1,320 lb.
   d. 7T. 1,270 lb.
   e. 10T. 1,500 lb.
4. a. 48 oz.
   b. 2 lb. 4 oz.
5. a. 2,000,000 mg.
   b. 3,000,004 mg.
   c. 7,000,004 mg.
   d. 17,000 mg.
   e. 24,000,000 mg.
6. a. 40,000 g.
   b. 4 g.
   c. 35,000 g.
   d. 50,000,000 g.
   e. 78 g.
7. a. 1 metric ton
   b. 48 metric tons
   c. .048 metric tons
   d. .96 metric tons

ACTIVITY SHEET 7

1. 4
2. $1\frac{1}{4}$"
3. two sides longer
4. all sides equal
5. 3
6. 3
7. rectangle
8. triangle
9. rectangle
10. square
11. rectangle
12. triangle

ACTIVITY SHEET 8

1. rhombus
2. triangle
3. trapezoid
4. parallelogram
5. square
6. circle
7. parallelogram
8. rectangle
9. triangle
10. trapezoid
11. circle
12. square
13. rhombus
14. rectangle
15. triangle

ACTIVITY SHEET 9

Evaluated to the satisfaction of the instructor.

ACTIVITY SHEET 10

1. ____________
2. ____________
3. C and D
4. D to A, BC
5. AD
6. CD
7. D
8. AB
9. AB and ED
10. AD and BE
11. BE

ACTIVITY SHEET 11

1. perpendicular
2. horizontal
3. parallel
4. vertical
5. oblique
6. segment

ACTIVITY SHEET 12

Evaluated to the satisfaction of the instructor.

ACTIVITY SHEET 13

1. halves
2. $\frac{1}{2}$ inch
3. $3\frac{1}{2}$ in.

a. fourths, eighths
b. $\frac{1}{4}$ inch
c. $4\frac{3}{4}$ inches

ACTIVITY SHEET 14

a. 50 mm, 5 cm
b. 35 mm, $3\frac{1}{2}$ cm
c. 75 mm, $7\frac{1}{2}$ cm
d. 60 mm, 6 cm
e. 40 mm, 4 cm

Matching:

43 mm - 4.3 cm
78 mm - 7.8 cm
135 mm - 13.5 cm
520 mm - 52 cm
60 mm - 6 cm

ACTIVITY SHEET 15

A.
- a. inch
- b. inch
- c. centimeter
- d. centimeter

B.
- a. $3\frac{13}{16}$", $7\frac{1}{5}$ cm
- b. 2", $5\frac{1}{10}$ cm
- c. 4", $7\frac{3}{5}$ cm
- d. $1\frac{1}{2}$, $4\frac{1}{10}$ cm
- e. $4\frac{3}{8}$, $11\frac{1}{10}$ cm

ACTIVITY SHEET 16

Evaluated to the satisfaction of the instructor.

ACTIVITY SHEET 17

1. 9 lb. 14 oz.
2. 14 lb.
3. 15 T. 1800 lb.
4. 7 T. 400 lb.
5. 10 lb. 15 oz.
6. 15 lb. 2 oz.
7. 1 lb. 2 oz.
8. 8 lb. 8 oz.
9. 13 lb. 11 oz.
10. 18 T. 300 lb.
11. 3 lb. 9 oz.
12. 13 T. 1800 lb.

ACTIVITY SHEET 18

1. 31 lb. 4 oz.
2. 64 T. 1200 lb.
3. 24 T. 1200 lb.
4. 63 T. 1800 lb.
5. 15 lb.
6. 9 lb. 12 oz.
7. 62 lb. 7 oz.
8. 41 T.
9. 44 T. 900 lb.
10. 55 lb. 2 oz.
11. 52 lb. 5 oz.
12. 44 T. 750 lb.

ACTIVITY SHEET 19

1. 8.94 g
2. 74.4 oz. or 4 lb. 10.4 oz.
3. 140,000 lb.
4. \$.23
5. \$.60
6. 36
7. 16

ACTIVITY SHEET 20

1. Evaluated to the satisfaction of the instructor.

2. A=25°
   B=10°
   C=58°
   D=122°
   E=162°
   F=33°
   G=90°
   H=33°
   I=133°

ACTIVITY SHEET 21

Evaluated to the satisfaction of the instructor.

ACTIVITY SHEET 22

Evaluated to the satisfaction of the instructor.

ACTIVITY SHEET 23

AOB = 10°
AOC = 30°
AOD = 45°
AOE = 60°
AOF = 90°
AOG = 120°

AOH = 135°
AOI = 150°
AOJ = 160°
AOK = 165°
BOC = 20°
BOG = 110°

BOJ = 150°
BOK = 155°
DOF = 45°
DOG = 75°
DOI = 105°
EOF = 30°

EOJ = 100°
FOH = 45°
GOE = 60°
GOC = 90°
JOC = 130°
KOJ = 5°
LOA = 180°

ACTIVITY SHEET 24

1. X = 60°
Y = 120°
Z = 90°
W = 90°

2. R = 88°
S = 93°
T = 88°
U = 91°

3. A = 86°
B = 114°
C = 107°
D = 53°

4. H = 89°
J = 92°
K = 91°
L = 88°

The sum of the measure of angles of all quadrilaterals equals 360°.

ACTIVITY SHEET 25

1. 116.18 yds.
2. 150.72 ft.
3. 43.96 in.
4. 20.80 in.
5. 482.62 in.
6. 194.68 yds.
7. 50.24"
8. 226.08'
9. 21.98"
10. 26.69"
11. 3.14"
12. 2.75"
13. 1.96"
14. 3.53"
15. 3.93"
16. 3.14"
17. 2.75"
18. 1.96"
19. 3.53"
20. 3.93"

ACTIVITY SHEET 26

1. a. 7 ft.
b. 14 ft.

2. a. 2.45 ft.
b. 4.9 ft.

3. a. 14 mi.
b. 28 mi.

4. a. 21 yds.
b. 42 yds.

5. a. 28"
b. 56"

6. a. 2.8'
b. 5.6'

7. a. $1\frac{3}{4}$ yds.
b. $3\frac{1}{2}$ yds.

8. a. $4\frac{1}{2}$ ft.
b. 9 ft.

9. a. 10 in.
b. 20 in.

10. a. 7' $1\frac{1}{2}$"
b. 14' 3"

11. a. 4' 3"
b. 8' 6"

12. a. $5\frac{3}{4}$ yds.
b. $11\frac{1}{2}$ yds.

13. a. $1\frac{1}{2}$ mi.
b. 3 mi.

14. a. 2' 3"
b. 4' 6"

15. a. 3'
b. 6'

16. a. $4\frac{1}{2}$'
b. 9'

ACTIVITY SHEET 27

1. 2.87
2. 120 ft.
3. 75.36 ft.
4. 18' 10"
5. 18' 8 $\frac{1}{4}$'
6. 33.1 ft.
7. 4' 6"
8. 136 inches
9. 182 ft., $95.94
10. 8 yds.
11. 80 in.
12. $9.78
13. Lot A, 6 ft.
14. 2 spools, $15,30
15. 594 ft.
16. 42, $3.36
17. 153.86"
18. 21.98'
19. 56.52"
20. 43.96 ft.
21. 87.92 in., 60.05
22. 93 $\frac{1}{3}$ ft.
23. yes
24. 360 ft.
25. 840 ft.

ACTIVITY SHEET 28

1. a. 10 cm.
    b. 6 $\frac{7}{10}$ cm.
    c. 11 $\frac{1}{2}$ cm.
    d. 16 cm.
    e. 9 $\frac{7}{10}$ cm.
    f. 13 $\frac{9}{10}$ cm.
2. a. 7 cm. 2 mm.
    b. 11 cm. 6 mm.
    c. 8 cm. 3 mm.
    d. 12 cm. 8 mm.

ACTIVITY SHEET 29

1. No. All are equal.
2. (a) 5 inches (b) 20 inches
3. Since all sides are equal, multiply: 4 x 7 = perimeter
4. No. Opposite sides are equal.
5. side CD
6. side BC
7. 20"
8. Since opposite sides are equal, there are two sides 8' long and two wide; therefore, perimeter = (2 x 8) + (2 x 5)

ACTIVITY SHEET 30

1. 46'
2. 80"
3. 22 yds.
4. 14'
5. 22'

ACTIVITY SHEET 31

a. 49"

b. 11' 6"

c. $7\frac{7}{8}$"

d. 18.9"

e. 146"

f. $3\frac{1}{2}$"

g. 175'

h. 13.2 cm.

i. 36 meters

j. 38 yds. 2 ft.

k. 120"

l. 132 yds.

m. 400 ft.

n. $31\frac{3}{4}$"

o. 12' 10"

1. 51 ft.
2. 12 yds. 2 ft.
3. 2 yds., $.60

ACTIVITY SHEET 32

1. 64 sq. in.
2. 144 sq. cm.
3. $6\frac{1}{4}$ sq. cm.
4. 4.41 sq. cm.
5. 1225 sq. mi.
6. 1.11 sq. yds.
7. 75.69 sq. yds.
8. $95\frac{1}{16}$ sq. in.

ACTIVITY SHEET 33

1. 192 sq. cm.
2. $6\frac{5}{12}$ sq. ft.
3. 64 sq.
4. 250 sq. yds.
5. $1\frac{1}{8}$ sq. in.
6. $1\frac{17}{32}$ sq. in.
7. $2\frac{3}{16}$ sq. in.
8. $\frac{25}{32}$ sq. in.

ACTIVITY SHEET 34

1. 44 sq. ft.
2. 36 sq. yds.
3. $5\frac{5}{6}$ sq. '
4. 72 sq. '
5. $53\frac{5}{8}$ sq. "
6. .91 sq. yds.
7. $\frac{1}{6}$ sq. ft.
8. 3.64 sq. cm.
9. 9.45 sq. "

ACTIVITY SHEET 35

1. 84 sq. in.

2. 175 sq. ft.

3. 18 sq. ft.

4. 33 sq. in.

5. b = 1", h = $\frac{1}{2}$"

   A = $\frac{1}{4}$ sq. in.

6. b = $\frac{3}{4}$" h = $\frac{1}{2}$"

   A = $\frac{3}{16}$ sq. in.

7. b = $1\frac{1}{2}$" h = $\frac{3}{8}$"

   A = $\frac{9}{32}$ sq. in.

8. b = $1\frac{3}{4}$" h = $\frac{5}{8}$"

   A = $\frac{35}{64}$ sq. in.

9. 256 sq. yds.

10. 1,064 sq. ft.

11. 484 sq. cm.

12. 3816 sq. yds.

13. 51 sq. "

14. 9.28 sq. '

15. $5\frac{1}{4}$ sq. ft.

16. $1\frac{2}{3}$ sq. ft.

17. 42 sq. ft.

18. 120 sq. in.

ACTIVITY SHEET 36

1. 12462.66 sq. in.
2. 1256 sq. ft.
3. 6358.5 sq. mi.
4. 2461.76 sq. yds.
5. 38.47 sq. ft.
6. 54.51 sq. ft.
7. 7.07 sq. ft.
8. 5150.39 sq. in.
9. 1962.5 sq. yds.
10. 1384.74 sq. ft.
11. 207.29 sq. ft.
12. 122.66 sq. ft.
13. 86.63 sq. ft.
14. 9856 sq. yds.
15. 55.44 sq. mi.
16. 1.23 sq. in.
17. 0.31 sq. in.
18. 0.79 sq. in.
19. 0.89 sq. in.
20. 0.60 sq. in.
21. 0.44 sq. in.

ACTIVITY SHEET 37

1. a. 70.85 sq. ft.
   b. 29.83 ft.

2. a. 5538.96 sq. ft.
   b. 263.76 ft.

3. a. 38.47 sq. ft.
   b. 21.98 ft.

4. 452.16 sq. in.

5. 452.16 sq. in.

6. 254.34 sq. mi.

7. 5538.96 sq. mi.

8. 63.59 sq. ft.

9. penny ≐ 283.39 sq. mm.
   quarter ≐ 452.16 sq. mm.
   half dollar ≐ 754.39 sq. mm.

ACTIVITY SHEET 38

1. a. triangle
   b. 6 sq. cm.
   c. 12 cm.

2. a. trapezoid
   b. 60 sq. cm.
   c. 36 cm.

3. a. rhombus
   b. 14 sq. m.
   c. 16 m.

4. a. rectangle
   b. 308 sq. mm.
   c. 78 mm.

5. a. square
   b. 196 sq. cm.
   c. 56 cm.

6. a. circle
   b. 615.44 sq. m.
   c. 87.92 m.

7. a. triangle
   b. 630 sq. mm.
   c. 132 mm.

8. a. circle
   b. 7.065 sq. cm.
   c. 9.42 cm.

ACTIVITY SHEET 39

1. $18\frac{7}{9}$ sq. yds.

2. 900 sq. yds.

3. 17,400 sq. ft.

4. $22.86

5. 5 watts

ACTIVITY SHEET 40

a. 144
b. 12
c. 1728
d. 27

ACTIVITY SHEET 41

c. 24 cubes
d. l = 3, w = 8, h = 1
   l = 2, w = 12, h = 1
   l = ?, w = ?, h = ?; etc.

ACTIVITY SHEET 42

1. 18 cubes
2. 27 cubes
3. 18 cubes
4. 40 cubes
5. 12 cubes
6. 20 cubes
7. 6 cubes
8. 8 cubes
9. 18 cubes
10. 56 cubes

ACTIVITY SHEET 43

1. 60 cu. ft.
2. 63 cu. in.
3. 30 cu. yd.
4. 60 cu. in.
5. 64 cu. yd.
6. 40 cu. ft.

ACTIVITY SHEET 44

1. 11,000 cu. mm.
2. 88,704 cu. mm.
3. 1,078 cu. ft.
4. 2.67 cu. ft.

5. a. 1,848 cu. in.

   b. 9,625 cu. cm.

   c. $136\frac{8}{9}$ cu. ft.

   d. 4851 cu. cm.

   e. $1728\frac{4}{7}$ cu. m.

   f. 45,276 cu. ft.

ACTIVITY SHEET 45

1 cup ≐ 237 ml
1 pint ≐ 474 ml
1 quart ≐ 948 ml
1.9 liter ≐ 2 quart
3300 ml ≐ $3\frac{1}{2}$ qt.

ACTIVITY SHEET 46

1. 13 gal.
2. 300 gal.
3. 750 gal.
4. 40 bu.
5. 292 bu.

6. $734\frac{2}{5}$ bu.

7. 12 cu. ft.
8. 160 cu. ft.
9. 285 cu. ft.
10. 8,316 cu. in.
11. 17,280 cu. in.
12. 233,280 cu. in.

ACTIVITY SHEET 47

1. -6°
2. 24°
3. 125°
4. 6°
5. 3°
6. 8°
7. 90°
8. 81°
9. 54°
10. -5°

ACTIVITY SHEET 48

1. -1°
2. 49°
3. 5°
4. 194°
5. a. 212°
   b. 100°
6. a. 32°
   b. 0°
7. a. -9°
8. a. 67°F
   b. 38°C
   c. 86°C
   d. 0°

ACTIVITY SHEET 49

1. 100°, 50°, 10°, 180°, 18°.

2. a. 86°F; 104°F; 95°; 95°.
   b. 18°; 0°; 32°; 180°, lacked 32°, yes

3. a. 40°C = 104°F
   80°C = 176°F
   65°C = 149°F
   35°C = 95°F
   20°C = 68°F
   10°C = 50°F

   b. 77°F = 25°C
   68°F = 20°C
   104°F = 40°C
   131°F = 55°C
   59°F = 15°C
   86°F = 30°C

UNIT IX

MEASUREMENT

ANSWERS TO UNIT TEST

PART 1

1. f
2. b
3. h
4. a
5. e
6. c
7. j
8. d
9. g
10. i

PART 2

1. By the use of his foot or distance from elbow to finger tips
2. Cubit
3. So that measurements will not vary
4. inch
5. yardstick
6. ruler
7. tape measure
8. ruler
9. cloth tape measure
10. So that it will be easier and measurements will be more accurate

PART 3

A. Evaluated to the satisfaction of the instructor.

B. 1. 168
   2. 264
   3. 9
   4. $6\frac{1}{2}$
   5. 576
   6. 450

C. 1. 0.063
   2. 8.8
   3. 0.75
   4. 350

D. 1. 3 lb. 6 oz.
   2. 4 lb. 3 oz.
   3. 5 lb. 3 oz.
   4. 4 lb. 15 oz.

E. 1. 2,000,000 mg.
   2. 3,000,004 mg.
   3. 17,000 mg.
   4. 24,000,000 mg.

PART 4

A. 4
B. 1 in.
C. two sides are longer
D. 1. rectangle
   2. trapezoid
   3. parallelogram
   4. triangle
   5. square
   6. rhombus
   7. circle

PART 5

A. 1. ____________
   2. ____________
   3. C and D
   4. D and A, BC

B. 1. perpendicular
   2. horizontal
   3. parallel
   4. vertical
   5. oblique
   6. segment

PART 6

A. 43 mm 4.3 cm
   78 mm 7.8 cm
   135 mm 13.5 cm
   520 mm 52 cm
   60 mm 6 cm

B.

	inches	centimeters
1.	$3\frac{13}{16}$	$7\frac{1}{5}$
2.	2	$5\frac{1}{10}$
3.	4	$7\frac{3}{5}$
4.	$1\frac{1}{2}$	$4\frac{1}{10}$
5.	$4\frac{3}{8}$	$11\frac{1}{10}$

C. 1. 9 lb. 14 oz.
   2. 14 lb.

D. 1. 1 lb. 2 oz.
   2. 8 lb. 8 oz.

E. $x = 60^\circ$ $z = 90^\circ$
   $y = 120^\circ$ $w = 90^\circ$

F. 1. 116.18 yds.
   2. 150.72 ft.
   3. 43.96 in.

G. 1. 46'
   2. 80"
   3. 22 yds.
   4. 14'
   5. 22'

H. 1. 4 sq. ft.
   2. 32 sq. in.
   3. 15 sq. in.
   4. 6 sq. in.
   5. 113.04 sq. in.

I. 24 cubic inches

J. 169.56 cubic inches

PART 7

1. 33°F
2. 10°
3. 0
4. 32°
5. 95°F

UNIT IX

MEASUREMENT

PRE/POST TEST

PART 1

_____1. Figure having three sides and three angles

_____2. Two lines having the same end point

_____3. A four sided figure with two parallel ends of equal lengths and two parallel sides of equal lengths and no right angles

_____4. A flat round figure formed by one curved line which joins into a ring shape

_____5. Closed shapes formed by straight or curved lines

a. angle

b. circle

c. geometric figures

d. parallelogram

e. triangle

PART 2

1. In the past how were objects measured?

2. What was the distance from the elbow to the tip of the fingers called?

3. Why do we need standard measuring devices?

4. Why is it important to use the proper measuring device?

PART 3

1. Change the measures to either larger or smaller units as indicated.

   a. 14 ft. = _____ in.
   b. 22 ft. = _____ in.
   c. 108 in. = _____ ft.
   d. 450 ft. = _____ yds.

2. Change the following units as indicated.

   a. 6.3 cm. = _____ meters
   b. 88 mm. = _____ cm.

3. Change to pounds and ounces.

   a. 54 oz. = _____ lb. _____ oz.
   b. 67 oz. = _____ lb. _____ oz.

4. Change to milligrams.

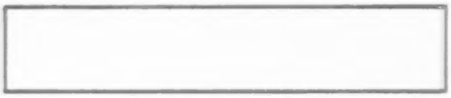
   a. 2 kg = __________ mg.
   b. 17 g = __________ mg.

PART 4

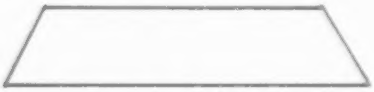
Match the correct name to each geometric figure.

circle
rectangle
parallelogram
triangle
rhombus
square
trapezoid

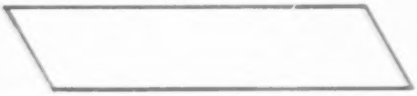
1. __________________



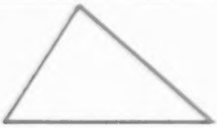
2. __________________



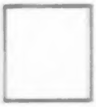
3. __________________



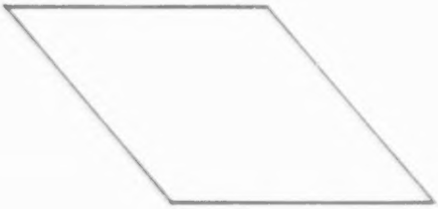
4. __________________



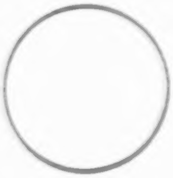
5. __________________



6. __________________



7. __________________

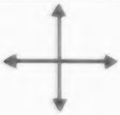


PART 5

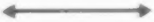
Identify the following lines and write in the correct term.

horizontal	perpendicular
oblique	segment
parallel	vertical

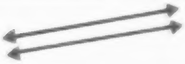
a. ________________



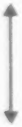
b. ________________



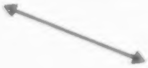
c. ________________



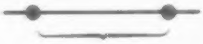
d. ________________



e. ________________

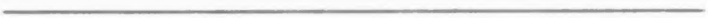


f. ________________



PART 6

1. How long is this line in inches? ______________

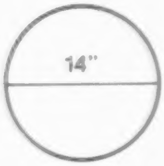


2. Work the following problems with weight.

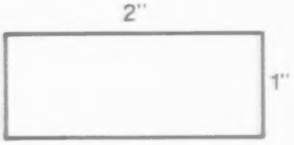
a. 4 lb. 6 oz.
+5 lb. 8 oz.

b. 11 lb. 14 oz.
- 3 lb. 6 oz.

3. Find the circumference of this circle. __________

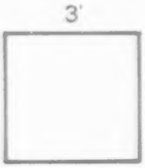


4. Find the perimeter of this rectangle. ____________

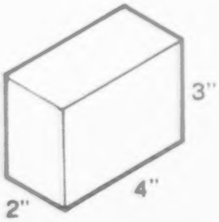


5. Find the area of this square. __________

A = s x s



6. Find the volume of this rectangle. __________



PART 7

1. If the temperature was 45° Fahrenheit and it dropped 12°, what would the temperature be? ____________________

2. If the temperature was 90° Celsius how many degrees would it have to go up to reach boiling point? ____________________

MEASUREMENT

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. Angle--two lines having the same end point
2. Area--the number of square units in a given figure
3. Circle--a flat round figure formed by one curved line which joins into a ring shape; all points of the curved line are equal distance from the center point
4. Foot--a unit of length equal to $\frac{1}{3}$ yard
5. Formula--a rule for figuring something
6. Geometric figures--closed shapes formed by straight or curved lines
7. Horizontal line--a line which runs left to right
8. Inch--a unit of length equal to $\frac{1}{36}$ yard
9. Line segment--a portion of a line which has two end points
10. Oblique line--a line which runs slightly in between horizontal and vertical
11. Ounce--a unit of weight equal to $\frac{1}{16}$ pound
12. Parallel lines--lines which run in the same direction but never touch
13. Parallelogram--a four sided figure with two parallel ends of equal lengths and two parallel sides of equal length and no right angles
14. Perpendicular line--horizontal and vertical lines which cross
15. Perimeter--the distance around a geometric figure
16. Pound--a unit of weight equal to 16 ounces
17. Protractor--an instrument used to measure an angle
18. Ray--the term used for the lines making up the sides of an angle
19. Rectangle--four sided figure with two parallel ends of equal length and two parallel sides of equal length and four right angles
20. Rhombus--a figure having four sides of equal length and no right angles
21. Ruler--measuring instrument twelve inches long
22. Square--a figure having four sides of equal length and four right angles
23. Square measure--the length of an object multiplied by the width
24. Trapezoid--a four sided figure with only one pair of opposite sides parallel

25. Triangle--figure having three sides and three angles

26. Vertex--the common end point of two rays

27. Vertical line--a line which runs up and down

28. Yard--a unit of length equal to 36 inches or 3 feet

29. Yardstick--measuring instrument 36 inches long

MEASUREMENT

ACTIVITY SHEET 1--MATCHING TERMS WITH DEFINITIONS

Directions: Match the terms with their definitions by placing the correct letter in the blanks.

_____ 1. A line which runs slightly in between horizontal and vertical

_____ 2. A four sided figure with two parallel ends of equal lengths and two parallel sides of equal length and no right angles

_____ 3. Measuring instrument 36 inches long

_____ 4. Two lines having the same end point

_____ 5. A unit of weight equal to $\frac{1}{16}$ pound

_____ 6. A rule for figuring something

_____ 7. The common end point of two rays

_____ 8. A figure having four sides of equal length and no right angles

_____ 9. An instrument used to measure an angle

_____10. A unit of length equal to 36 inches or 3 feet

_____11. A flat round figure formed by one curved line which joins into a ring shape; all points of the curved line are equal distance from the center point

_____12. Closed shapes formed by straight or curved lines

_____13. A line which runs up and down

_____14. Four sided figure with two parallel ends of equal length and two parallel sides of equal length and four right angles

_____15. A figure having four sides of equal length and four right angles

_____16. A line which runs left to right

a. angle

b. area

c. circle

d. foot

e. formula

f. geometric figure

g. horizontal line

h. inch

i. line segment

j. oblique line

k. ounce

l. parallel line

m. parallelogram

n. perpendicular line

o. perimeter

p. pound

q. protractor

r. ray

s. rectangle

t. rhombus

u. ruler

v. square

w. square measure

x. trapezoid

_____17. Lines which run in the same direction but never touch

_____18. Horizontal and vertical lines which cross

_____19. The length of an object multiplied by the width

_____20. The term used for the lines making up the sides of an angle

_____21. Figure having three sides and three angles

_____22. A portion of a line which has two endpoints

_____23. A unit of length equal to $\frac{1}{3}$ yard

_____24. A four sided figure with only one pair of opposite sides parallel

_____25. The number of square units in a given figure

_____26. A unit of length equal to $\frac{1}{36}$ yard

_____27. The distance around a geometric figure

_____28. Measuring instrument 12 inches long

_____29. A unit of weight equal to 16 ounces

y. triangle

z. vertex

aa. vertical line

bb. yard

cc. yardstick

UNIT IX

MEASUREMENT

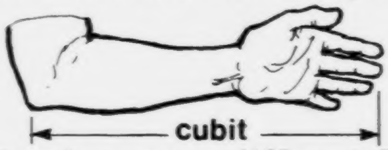
INFORMATION SHEET 2--STANDARD MEASURING DEVICES

I. Why Do We Need Standard Measuring Devices?

   A. In the past, the hand or foot was used to measure objects.

      1. The foot was used to measure length in feet.

      2. The distance from the elbow to the tip of the fingers was termed a cubit.

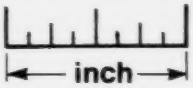


   B. Each person's foot and arm was a different length from his/her neighbor's.

      1. If buying or selling something by the foot, the price would vary.

      2. In order to keep the cost the same, regardless of who does the measuring, standard measuring devices were developed.

   C. The base unit of measurement of one inch was developed. The inch is used to make all English standard measuring devices for linear measure.



II. Recognizing Standard Measuring Devices

   A. Ruler--twelve inches long, may be made of wood, metal, or plastic

   B. Yardstick--thirty-six inches long, may be made of wood or metal

   C. Tape measure--vary in length, made of metal or cloth

   D. Folding ruler--six feet in length, made of wood

INFORMATION

III. Selecting Standard Measuring Devices

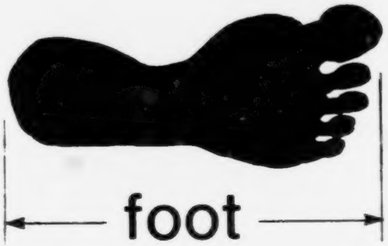
A. When measuring short distances, 12 inches or less, you may wish to use a ruler.

B. As you move to larger objects, 36 inches, a yardstick will work well.

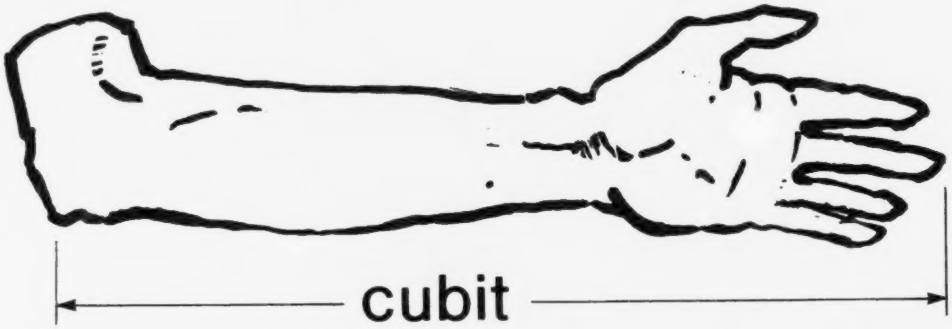
C. On larger measurements, such a om size or lumber measurement, a tape measure or folding ruler may b sed.

D. When measuring uneven surfaces outside dimensions, you may choose to use a cloth tape measure.

MEASUREMENT

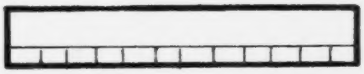


Long ago man used his foot to measure length

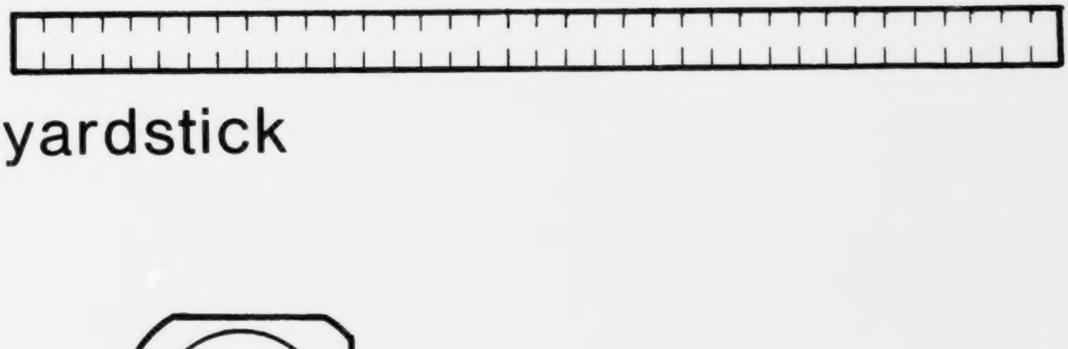


The distance from the elbow to the tip of the fingers was called 1 cubit

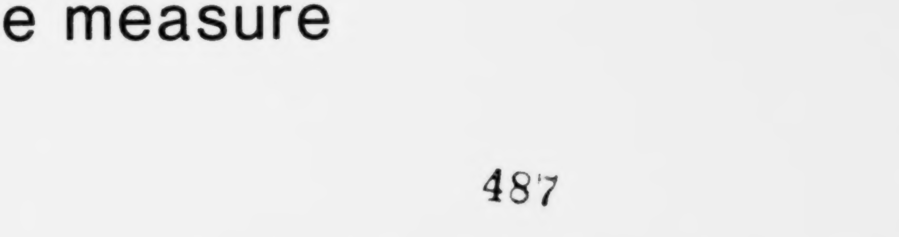
MEASUREMENT DEVICES



ruler



yardstick



tape measure

TM-2

UNIT IX

MEASUREMENT

ACTIVITY SHEET 2--MEASUREMENT QUESTIONS

Directions: Read each of the following questions and answer them in the space provided.

1. In the past, how were objects measured?

2. What was the distance from the elbow to the tip of the fingers called?

3. Why do we need standard measuring devices?

4. What is the base unit of measurement for English standard measuring devices?

5. What measuring instrument is 36 inches long?

6. What measuring instrument is 12 inches long?

7. What measuring instrument would you use to measure a football field?

8. What measuring instrument would you use to measure a sheet of paper?

9. What measuring instrument would you use to measure your waist?

10. Why is it important to use the proper measuring device?

MEASUREMENT

INFORMATION SHEET 3--UNITS OF MEASUREMENT

I. English Measurement System

A. The English measurement system is made up of standard units of measurement which are always the same.

B. Linear measurement units are:

1. 12 inches (in.) = 1 foot (ft.)

2. 3 feet = 1 yard (yd.)

3. 1760 yards = 1 mile (mi.)

4. 5,280 feet = 1 mile

C. Weight measurement units are:

1. 16 ounces (oz.) = 1 pound (lb.)

2. 2,000 pounds = 1 ton

D. Liquid measurement units are:

1. 2 tablespoons (tbsp.) = 1 fluid ounce (fl. oz.)

2. 8 fluid ounces = 1 cup

3. 2 cups = 1 pint (pt.)

4. 2 pints = 1 quart (qt.)

5. 4 quarts = 1 gallon

II. Metric Measurement System

A. The metric measurement system is made up of standard units of measurement which are always the same.

B. Linear measurement units are:

1. 10 millimeters (mm) = 1 centimeter (cm)

2. 10 centimeters (cm) = 1 decimeter (dm)

3. 10 decimeters (dm) = 1 meter (m)

4. 10 meters (m) = 1 dekameter (dam)

5. 10 dekameters (dam) = 1 hectometer (hm)

6. 10 hectometers (hm) = 1 kilometer (km)

C. Weight and mass measurement units are:

1. 10 milligrams (mg) = 1 centigram (cg)
2. 10 centigrams (cg) = 1 decigram (dg)
3. 10 decigrams (dg) = 1 gram (g)
4. 10 grams (g) = 1 dekagram (dag)
5. 10 dekagrams (dag) = 1 hectogram (hg)
6. 10 hectograms (hg) = 1 kilogram (kg)
7. 1 cubic decimeter (dm^3) = 1 liter (l) = 1 kilogram (kg)

D. (Capacity) liquid measurement units are:

1. 10 milliliters (ml) = 1 centiliter (cl)
2. 10 centiliters (cl) = 1 deciliter (dl)
3. 10 deciliters (dl) = 1 liter (l)
4. 10 liters (l) = 1 dekaliter (dal)
5. 10 dekaliters (dal) = 1 hectoliter (hl)
6. 10 hectoliters (hl) = 1 kiloliter (kl)
7. 1 cubic decimeter (dm^3) = 1 liter (l)

LINEAR MEASUREMENT

12 inches (in.) = 1 foot (ft.)

3 feet = 1 yard (yd.)

1760 yards = 1 mile (mi.)

5280 feet = 1 mile

WEIGHT MEASUREMENT

16 ounces (oz.)= 1 pound (lb.)

2,000 pounds = ton

LIQUID MEASUREMENT

2 tablespoons (tbsp.) = 1 fluid ounce

8 fluid ounces = 1 cup

2 cups = 1 pint (pt.)

2 pints = 1 quart (qt.)

4 quarts = 1 gallon

METRIC LINEAR MEASUREMENT

10 millimeters	(mm)	=	1 centimeter	(cm)
10 centimeters	(cm)	=	1 decimeter	(dm)
10 decimeters	(dm)	=	1 meter	(m)
10 meters	(m)	=	1 dekameter	(dam)
10 dekameters	(dam)	=	1 hectometer	(hm)
10 hectometers	(hm)	=	1 kilometer	(km)

METRIC WEIGHT
AND MASS MEASUREMENT

10 milligrams (mg) = 1 centigram (cg)
10 centigrams (cg) = 1 decigram (dg)
10 decigrams (dg) = 1 gram (g)
10 grams (g) = 1 dekagram (dag)
10 dekagrams (dag) = 1 hectogram (hg)
10 hectograms (hg) = 1 kilogram (kg)
1 cubic decimeter (dm^3) = 1 liter (l) = 1 kilogram (kg)

METRIC CAPACITY OR LIQUID MEASUREMENT

10 milliliters (ml) = 1 centiliter (cl)
10 centiliters (cl) = 1 deciliter (dl)
10 deciliters (dl) = 1 liter (l)
10 liters (l) = 1 dekaliter (dal)
10 dekaliters (dal) = 1 hectoliter (hl)
10 hectoliters (hl) = 1 kiloliter (kl)
1 cubic decimeter (dm^3) = 1 liter (l)

MEASUREMENT

ACTIVITY SHEET 3--MAKING A RULER

1. Do not use your ruler for this exercise. On the line drawn below, indicate the following divisions of inches:

   a) $\frac{1}{2}$, $\frac{2}{2}$

   b) $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$

   c) $\frac{1}{8}$, $\frac{2}{8}$, $\frac{3}{8}$, $\frac{4}{8}$, $\frac{5}{8}$, $\frac{6}{8}$, $\frac{7}{8}$, $\frac{8}{8}$

   d) $\frac{1}{16}$, $\frac{2}{16}$, $\frac{3}{16}$, $\frac{4}{16}$, $\frac{5}{16}$, $\frac{6}{16}$, $\frac{7}{16}$, $\frac{8}{16}$
   $\frac{9}{16}$, $\frac{10}{16}$, $\frac{11}{16}$, $\frac{12}{16}$, $\frac{13}{16}$, $\frac{14}{16}$, $\frac{15}{16}$, $\frac{16}{16}$

Use the diagram on your ruler to complete the following:

There are how many:

2. sixteenths in $\frac{1}{2}$ inch? __________ in 1 inch? __________

3. eighths in $\frac{1}{2}$ inch? __________ in 1 inch? __________

4. fourths in $\frac{1}{2}$ inch? __________ in 1 inch? __________

5. halves in $\frac{1}{2}$ inch? __________ in 1 inch? __________

Equivalent fractions

6. $\frac{1}{8} = \frac{?}{16}$

7. $\frac{1}{4} = \frac{?}{8} = \frac{?}{16}$

8. $\frac{3}{8} = \frac{?}{16}$

9. $\frac{1}{2} = \frac{?}{4} = \frac{?}{8} = \frac{?}{16}$

10. $\frac{5}{8} = \frac{?}{16}$

11. $\frac{3}{4} = \frac{?}{8} = \frac{?}{16}$

12. $\frac{7}{8} = \frac{?}{16}$

13. $1 = \frac{?}{2} = \frac{?}{4} = \frac{?}{8} = \frac{?}{16}$

14. $\frac{12}{16} = \frac{?}{4}$

15. $\frac{5}{?} = \frac{10}{16}$

16. $\frac{4}{?} = \frac{1}{4}$

17. $\frac{14}{?} = \frac{7}{8}$

Circle the larger:

18. $\frac{7}{16}$ or $\frac{1}{8}$?

19. $\frac{5}{16}$ or $\frac{1}{2}$?

20. $\frac{3}{4}$ or $\frac{7}{8}$?

21. $\frac{6}{8}$ or $\frac{3}{4}$?

22. $2\frac{3}{4}$ or $1\frac{1}{4}$?

23. $\frac{15}{16}$ or $\frac{10}{8}$?

24. $\frac{5}{2}$ or $\frac{21}{8}$?

25. $\frac{1}{4} + \frac{1}{4} = \frac{?}{4} = \frac{?}{2}$

26. $\frac{1}{8} + \frac{2}{8} = \frac{?}{8}$

27. $\frac{7}{16} - \frac{3}{16} = \frac{?}{16}$

28. $3\frac{2}{16}$ or $3\frac{1}{4}$?

Use your ruler to draw each line of the length indicated. Use the dot for the beginning of each line.

29. $\frac{11}{8}$ inch

30. $2\frac{1}{16}$ inch

UNIT IX

MEASUREMENT

ACTIVITY SHEET 4--CONVERTING MEASURES

Directions: Change the measures to either larger or smaller units as indicated.

3 ft. = 1 yard
12 in. = 1 foot
36 in. = 1 yard

To change to larger units, divide. To change to smaller units, multiply.

Example:
10 ft. = $3\frac{1}{3}$ yards
15 yds. = 540 in.

1. 14 ft. = ________ in.
2. 23 yds. = ________ ft.
3. 18 ft. = ________ yds.
4. 22 ft. = ________ in.
5. 22 ft. = ________ yds.
6. 22 yds. = ________ ft.
7. 22 yds. = ________ in.
8. 22 in. = ________ ft.
9. 108 in. = ________ ft.
10. 108 in. = ________ yds.
11. 168 yds. = ________ ft.
12. 168 in. = ________ ft.
13. 168 in. = ________ yds.
14. 72 in. = ________ yds.
15. 90 in. = ________ ft.
16. 90 in. = ________ yds.
17. 144 ft. = ________ yds.
18. 18 yds. = ________ ft.
19. 1224 in. = ________ yds.
20. 48 ft. = ________ yds.
21. 126 in. = ________ yds.
22. 126 ft. = ________ yds.
23. 14 ft. = ________ yds.
24. 42 ft. = ________ yds.
25. 78 in. = ________ ft.
26. 99 ft. = ________ in.
27. 16 yds. = ________ in.
28. 750 in. = ________ ft.
29. 450 ft. = ________ yds.
30. 240 ft. = ________ yds.

ACTIVITY

MEASUREMENT

ACTIVITY SHEET 5--CONVERTING MEASURES

Directions: Change the measures to either larger or smaller units as indicated.

Milli - means one thousandth ($\frac{1}{1000}$ or .001)

Centi - means one hundredth ($\frac{1}{100}$ or .01)

1 millimeter = $\frac{1}{1000}$meter (write 1 mm = $\frac{1}{1000}$meter)

1 centimeter = $\frac{1}{100}$meter (write 1 cm = $\frac{1}{100}$meter)

1 meter = 1000 millimeters

1 centimeter = 10 millimeters

To change to larger units, divide. To change to smaller units, multiply.

Change the following units as indicated.

(1) 6.3 cm. = ____________ meters

(2) 100 mm. = ____________ meters

(3) 98 cm. = ____________ meters

(4) 88 mm. = ____________ cm.

(5) $1\frac{1}{2}$m. = ____________ mm.

(6) __________ meters = 75 cm.

(7) __________ meters = 78 mm.

(8) 78 cm. = ____________ mm.

(9) 3.5 meters = __________ cm.

(10) __________ meters = 85 cm.

MEASUREMENT

ACTIVITY SHEET 6--COUNTING MEASURES

English Weight Measure
16 ounces (oz.) = 1 pound (lb.)
100 lb. = hundred weight (cwt.)
2000 lb. = 1 ton

---

1. Change to ounces:

a. 2 lb. 9 oz. = ______ oz.
b. 6 lb. 5 oz. = ______ oz.
c. 24 lb. 8 oz. = ______ oz.
d. 15 lb. 11 oz. = ____ oz.
e. 19 lb. 10 oz. = ____ oz.

2. Change to pounds and ounces:

a. 54 oz. = _____ lb. _____ oz.
b. 67 oz. = _____ lb. _____ oz.
c. 57 oz. = _____ lb. _____ oz.
d. 83 oz. = _____ lb. _____ oz.
e. 79 oz. = _____ lb. _____ oz.

3. Change to tons and pounds:

a. 6270 lb. = _____ T. _____ lb.
b. 8750 lb. = _____ T. _____ lb.
c. 9320 lb. = _____ T. _____ lb.
d. 15,270 lb. = _____ T. _____ lb.
e. 21,500 lb. = _____ T. _____ lb.

4. Write the correct numberal in each of the following blanks.

a. 3 lb. = _____ oz.
b. 36 oz. = _____ lb. _____ oz.

Metric Weight Measures
1000 milligrams (mg.) = 1 gram
1000 grams = 1 kilogram (kg.)
1000 kilograms = 1 metric ton

5. Change to milligrams:

a. 2 kg. = _____
b. 3 kg. 4 mg. = _____
c. 7 kg. 4 mg. = _____
d. 17 gm. = _____
e. 24 kg. = _____

6. Change to grams:

   a. 40 kg. = _____
   b. 4000 mg. = _____
   c. 35 kg. = _____
   d. 50,000 kg. = _____
   e. 78,000 mg. = _____

7. Change to metric tons:

   a. 3000 kg. = _____
   b. 48,000 kg. = _____
   c. 48,000 g. = _____
   d. 960,000 g. = _____

UNIT IX

MEASUREMENT

INFORMATION SHEET 4--IDENTIFYING GEOMETRIC FIGURES

I. A geometric figure is a closed shape formed by straight or curved lines.

A. The circle is a flat round figure formed by one curved line which joins into a ring shape; all points of the curved line are equal distance from the center point.

B. The rectangle is a four sided figure with two parallel ends of equal length and two parallel sides of equal length and four right angles.

C. A parallelogram is a four sided figure with two parallel ends of equal length and two parallel sides of equal length and no right angles.

D. A rhombus is a figure having four sides of equal length and no right angles.

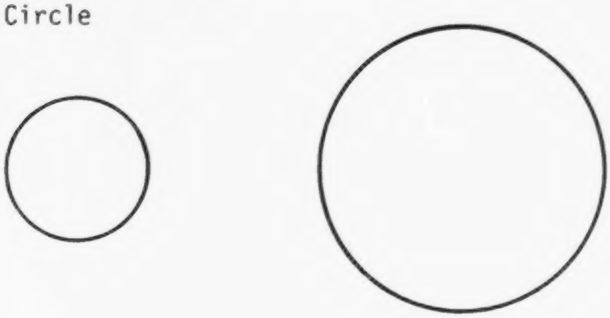
E. A square is a figure having four sides of equal length and four right angles.

F. The trapezoid is a four sided figure with only one pair of opposite sides parallel.

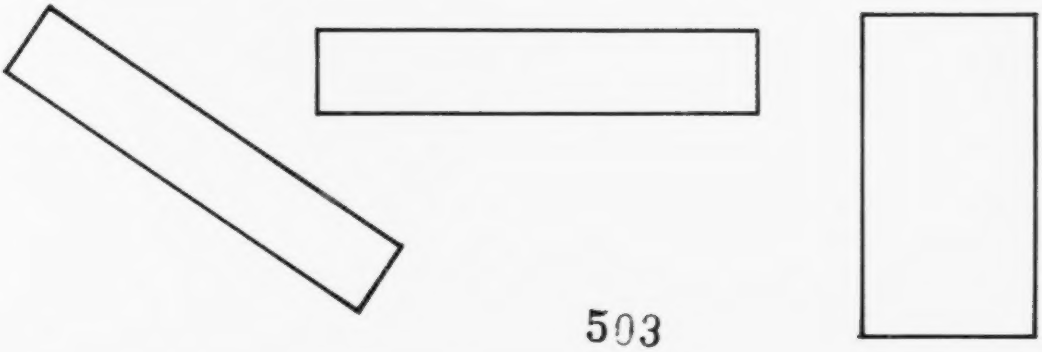
G. The triangle is a figure having three sides and three angles.

II. Recognizing geometric figures

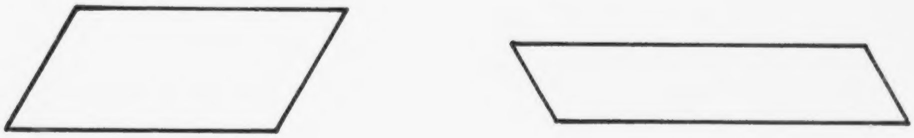
A. Circle



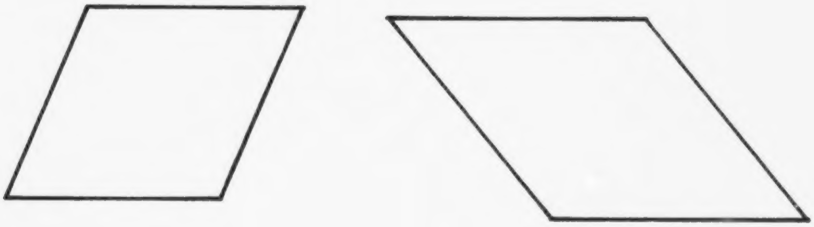
B. Rectangle



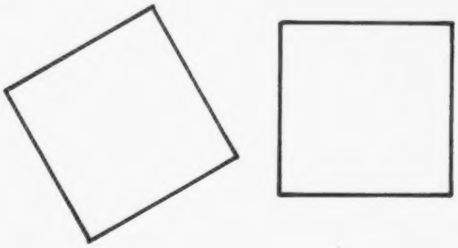
C. Parallelogram



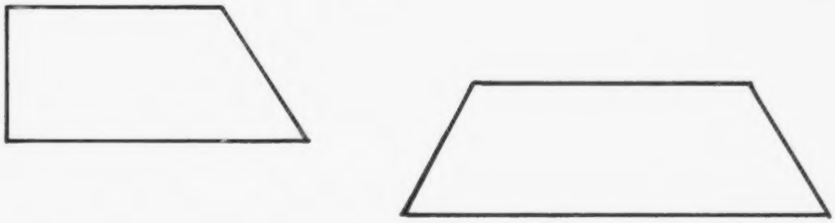
D. Rhombus



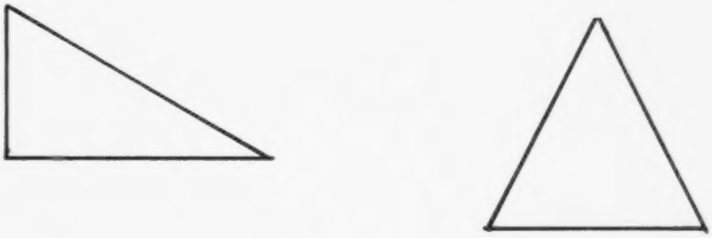
E. Square

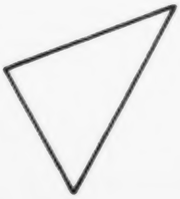


F. Trapezoid

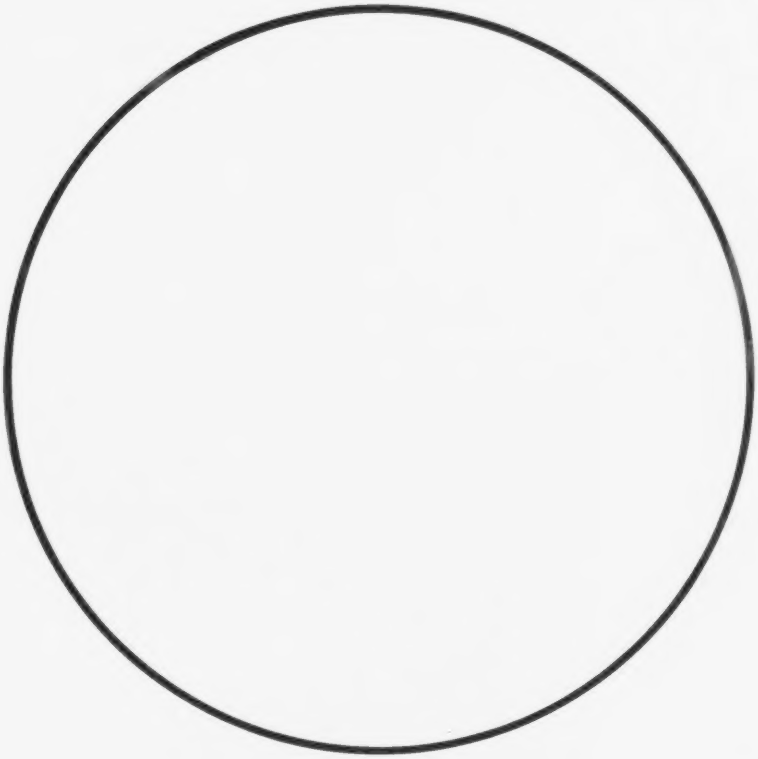


G. Triangle

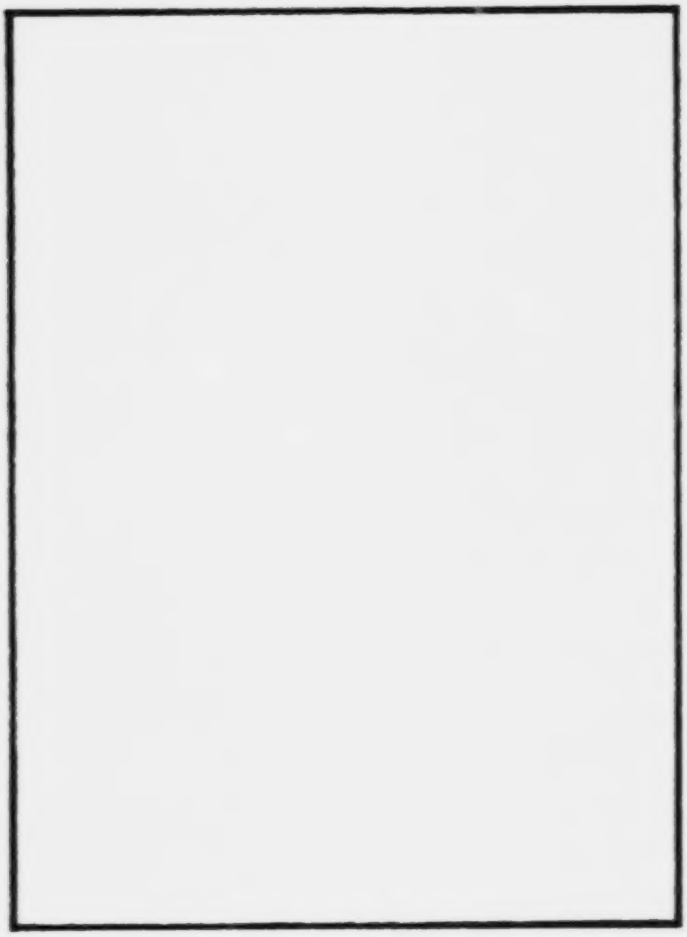




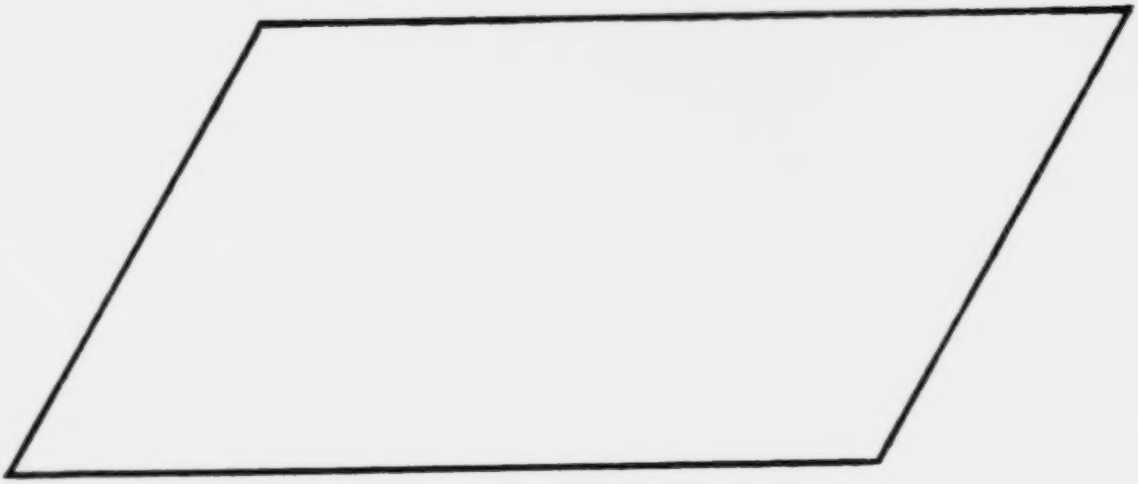
CIRCLE



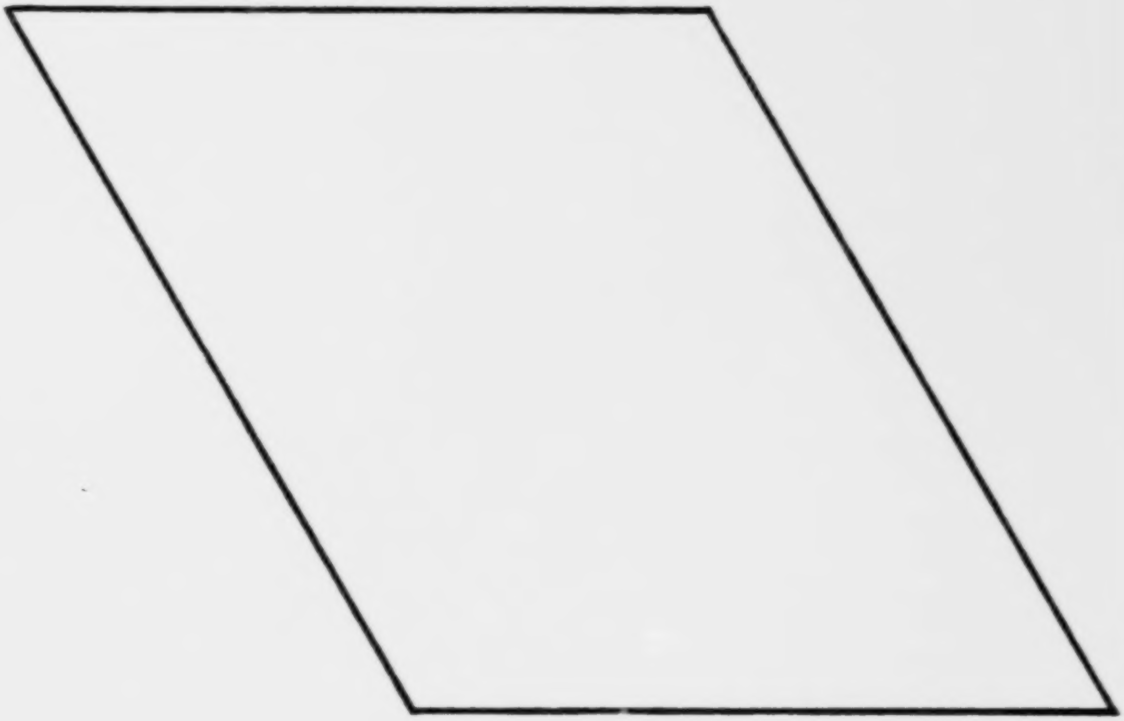
RECTANGLE



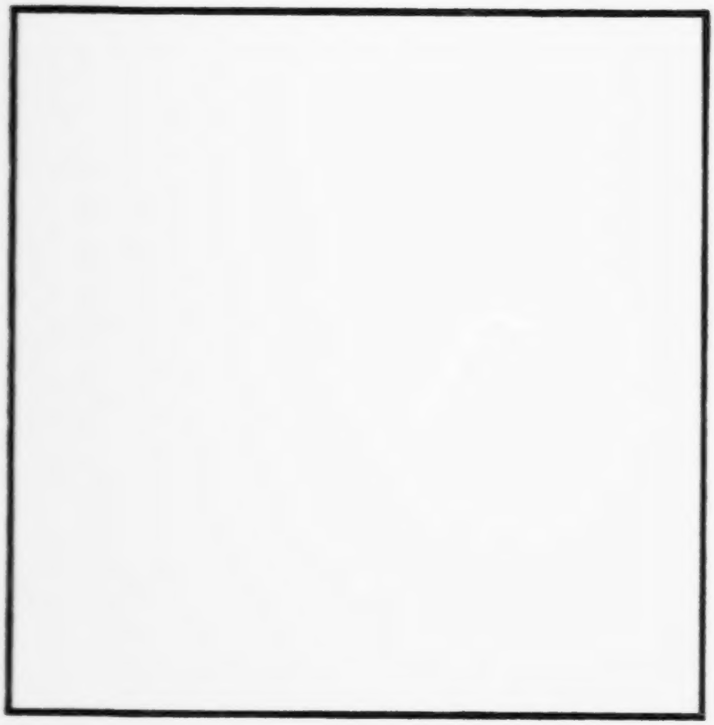
PARALLELOGRAM



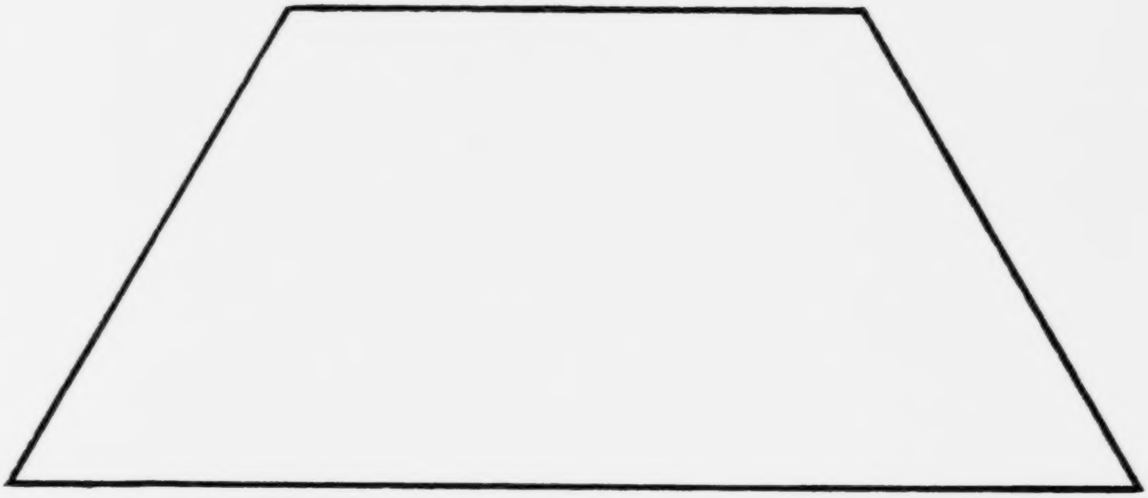
RHOMBUS



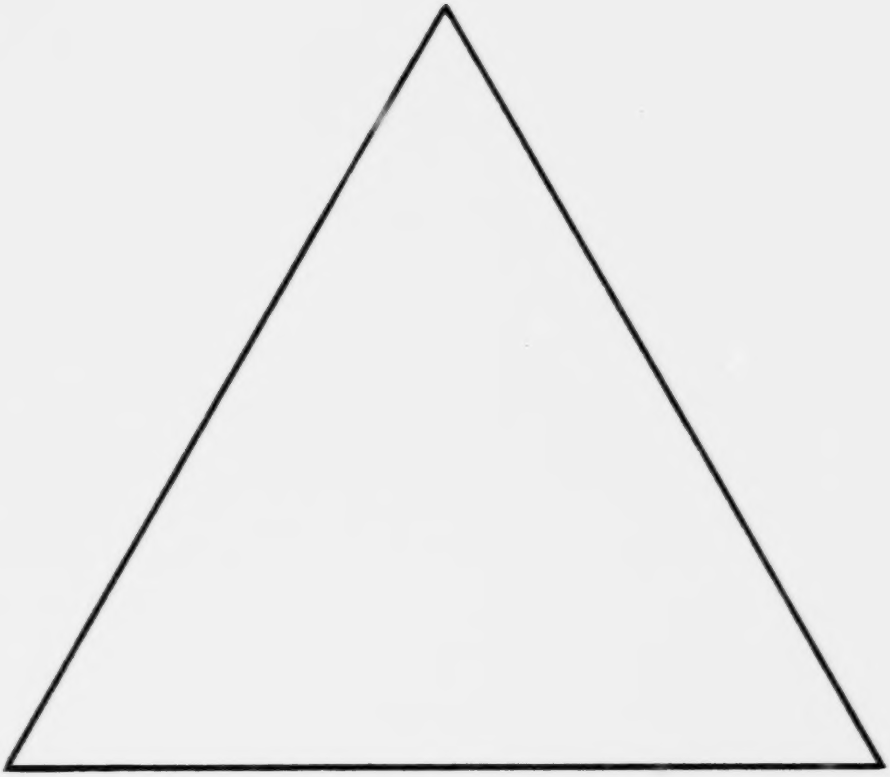
SQUARE



TRAPEZOID



TRIANGLE

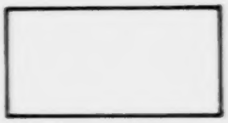


MEASUREMENT

ACTIVITY SHEET 7--RECOGNIZING GEOMETRIC FIGURES

Directions: Read and answer the following questions.

This is a rectangle.



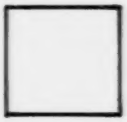
1. How many sides does it have?

2. How long are the sides?

3. How can you tell a rectangle from a square?

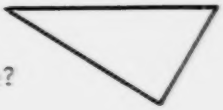
4. This is a square

   How do you know?



5. This is a triangle.

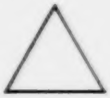
   How many sides does it have?



6. What does tri mean?

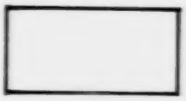
Identify each figure as a rectangle, a square, or a triangle. Write the name of each figure below it.

Example:

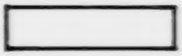


triangle

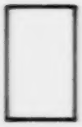
7.



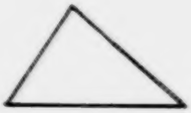
9.



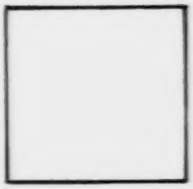
11.



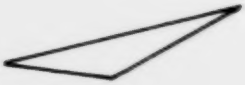
8.



10.



12.



ACTIVITY

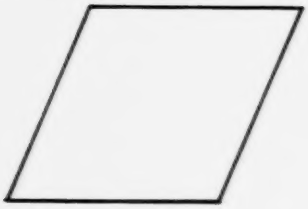
MEASUREMENT

ACTIVITY SHEET 8--IDENTIFYING GEOMETRIC FIGURES

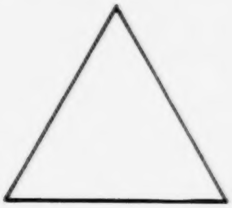
Directions: Match the correct name to each geometric figure.

A. Circle
B. Rectangle
C. Parallelogram
D. Rhombus
E. Square
F. Trapezoid
G. Triangle

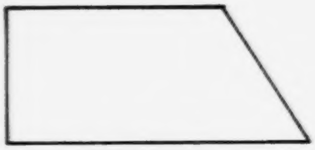
1. ____



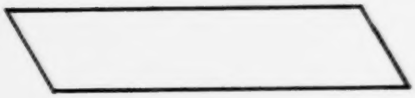
2. ____



3. ____



4. ____



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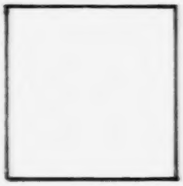

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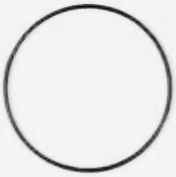
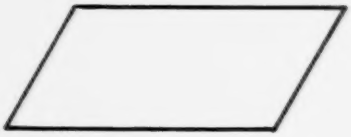
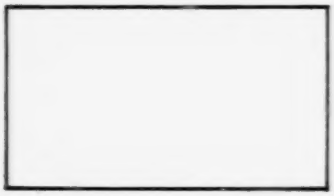


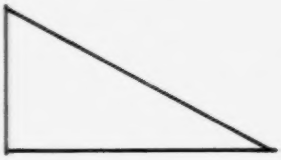
7. ____



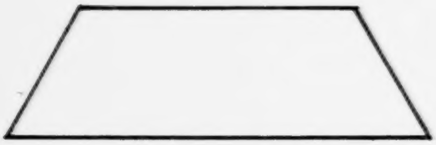
8. ____



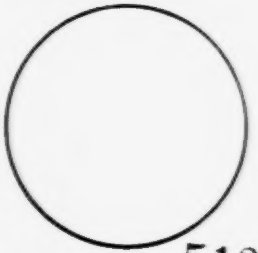
9. ____



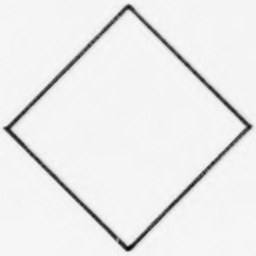
10. ____



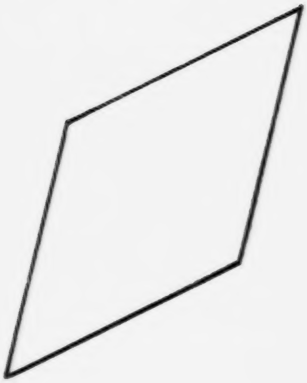
11. ____



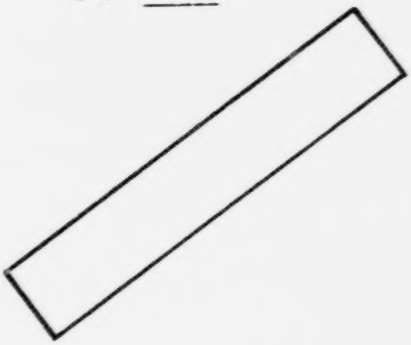
12. ____



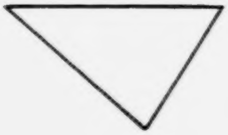
13. ____



14. ____



15. ____



UNIT IX

MEASUREMENT

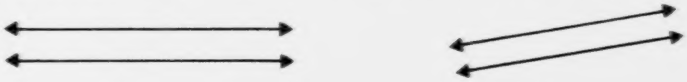
INFORMATION SHEET 5--GEOMETRIC LINES AND ANGLES

I. Geometric Lines

A. A horizontal line runs left and right.

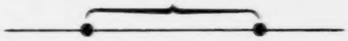
B. An oblique line runs slightly in between horizontal and vertical.

C. Parallel lines run in the same direction but never touch.



D. Perpendicular lines are horizontal and vertical lines which cross.

E. A line segment has two end points.



F. A vertical line runs up and down.

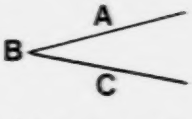
II. Geometric Angles

A. Angles are formed by lines having the same endpoint, these lines are called rays.

1. The common end point of the two rays is the vertex.

2. The two rays are called sides.

Example:



B vertex
BA side
BC side

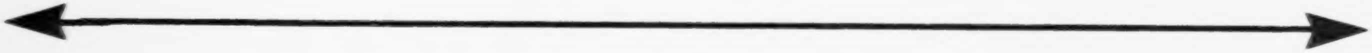
B. A protractor is used to measure angles.

1. Angles are measured by the number of "degrees."

2. A degree is $\frac{1}{360}$ of a full circle.

INFORMATION

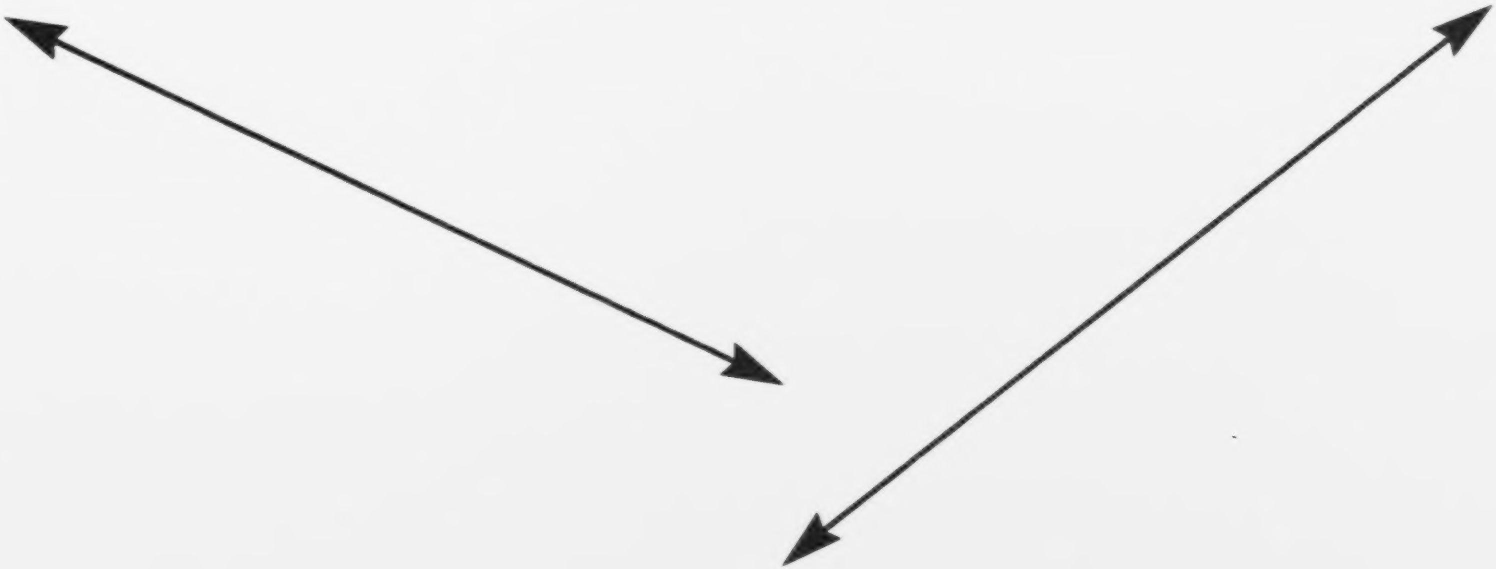
HORIZONTAL LINES



TM-16

791

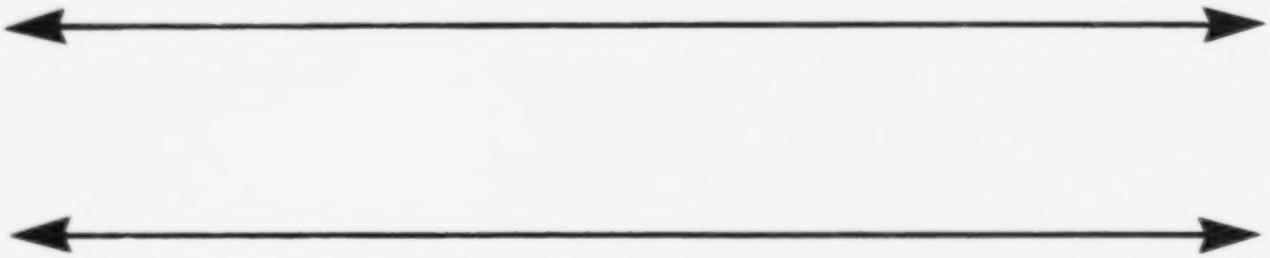
OBLIQUE LINES



TM-17

793

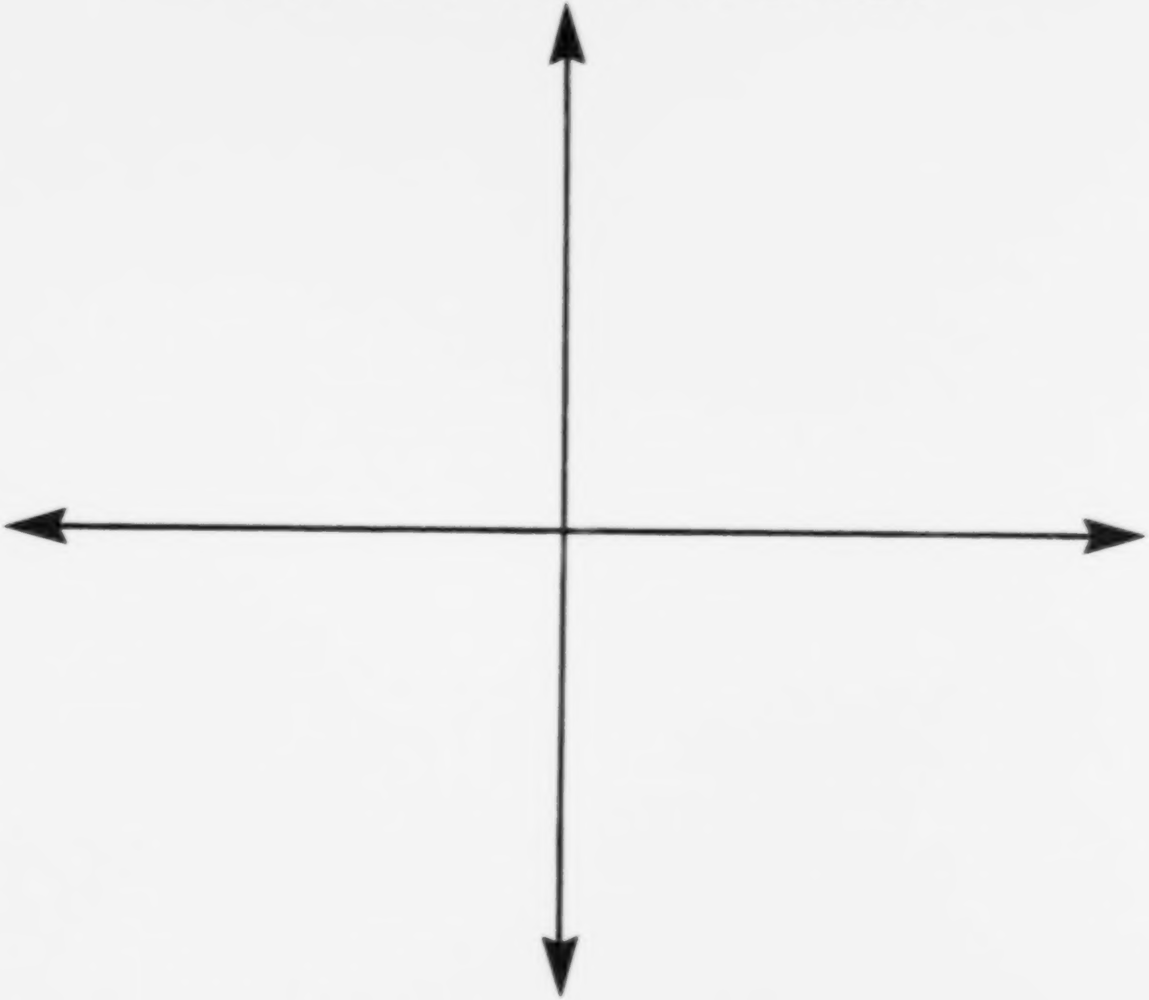
PARALLEL LINES



TM-18

795

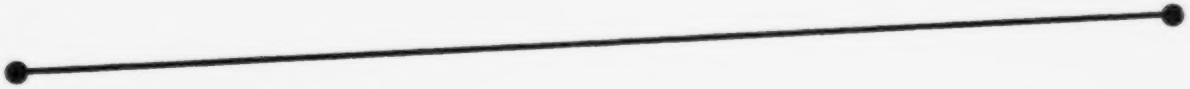
PERPENDICULAR LINES



TM-19

797

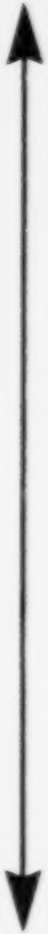
LINE SEGMENT



TM-20

799

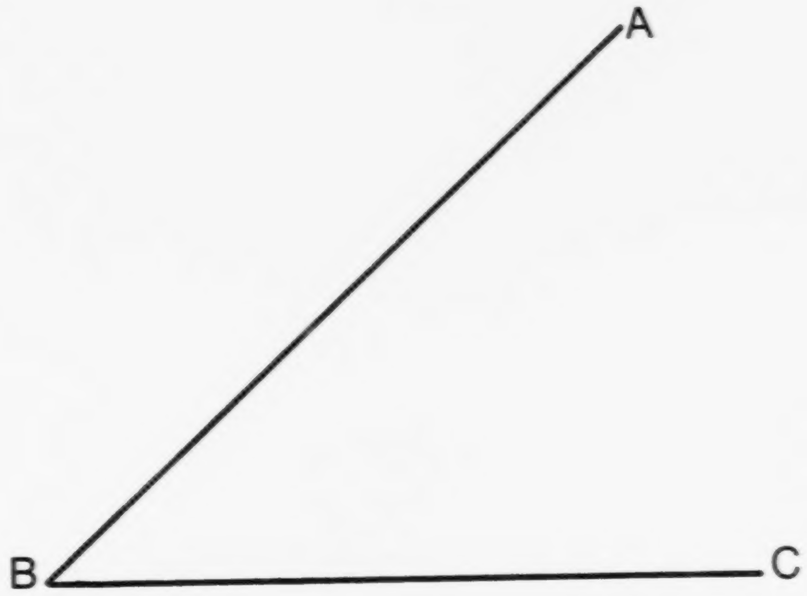
VERTICAL LINES



TM-21

801

ANGLES

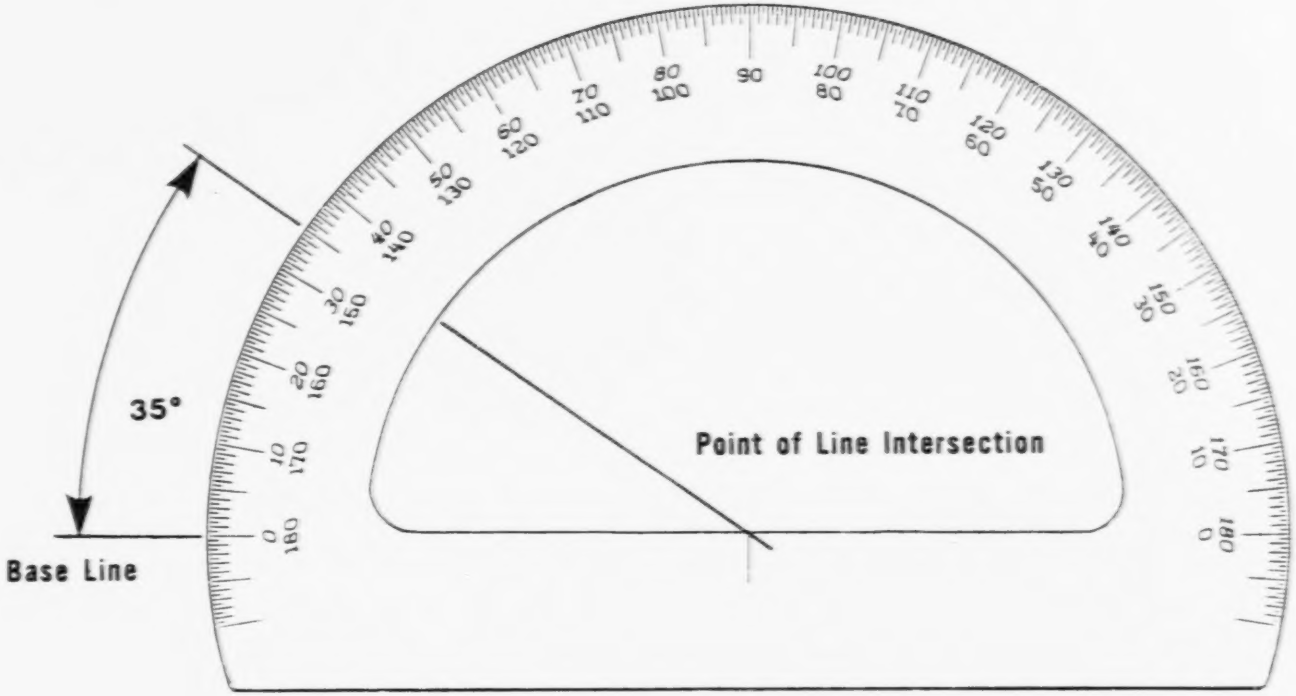


B Vertex

BA Side

BC Side

THE PROTRACTOR


35°
Base Line
Point of Line Intersection
0 180
10 170
20 160
30 150
40 140
50 130
60 120
70 110
80 100
90
100 80
110 70
120 60
130 50
140 40
150 30
160 20
170 10
180 0

UNIT IX

MEASUREMENT

ACTIVITY SHEET 9--LINES

1. Find ten things in the classroom that have parallel lines (two sides of the bulletin board, etc.).

2. Find ten things in the classroom that have intersecting lines (the legs of folding chairs, etc.).

3. Name ten things in the classroom that have perpendicular lines (edges of the desk, etc.).

4. List ten items outside of school that have parallel lines (railroad tracks, etc.).

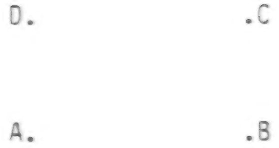
5. List ten items outside of school that have intersecting lines (highways, etc.).

6. List ten items outside the school that have perpendicular lines (windows of buildings, etc.).

MEASUREMENT

ACTIVITY SHEET 10--LINES AND SEGMENTS

I.



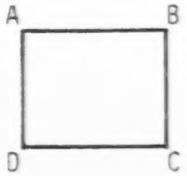
1. Draw a line segment from A to B.

2. Draw a line segment from B to C.

3. Make a mark between 2 points on the figure parallel to segment AB and draw the segment.
Between points _____ and _____.

4. Draw a line segment to close the figure. It is from point _____ to point _____. This line segment is parallel to segment _____.

II.



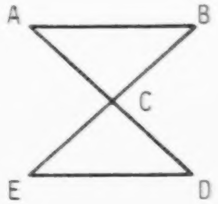
5. Segment _____ and segment BC are parallel.

6. Segment AB and _____ are parallel.

7. Segment DC intersects segment AD at point _____.

8. Segment AD intersects segment _____ at point A.

III.



9. Name two line segments which are parallel.
____

10. Segment _____ intersects _____ at point C.

11. Segment ED intersects segment _________ at point E.

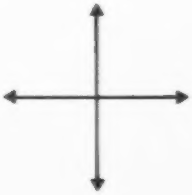
MEASUREMENT

ACTIVITY SHEET 11--IDENTIFYING LINES

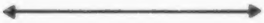
Directions: Identify the following lines and write in the correct term for the line or lines.

Horizontal	Perpendicular
Oblique	Segment
Parallel	Vertical

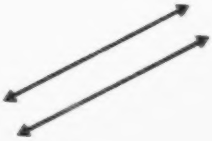
1. ______________



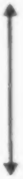
2. ______________



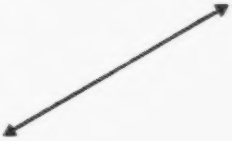
3. ______________



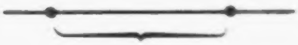
4. ______________



5. ______________



6. ______________

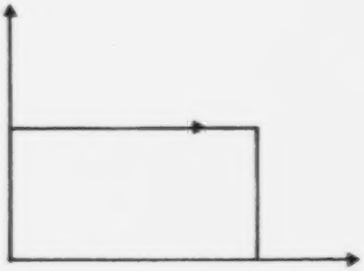


ACTIVITY

MEASUREMENT

ACTIVITY SHEET 12--ANGLES

Do you remember square corners? You can see now that the corners of squares and rectangles are parts of angles. Square corners are called right angles. Right angles are 90° angles. Other angles have special names, too.



Activity

Fold a piece of paper in half 4 times, first bottom to top, then left to right, etc. Now unfold your paper. Count how many right angles are formed from the folds.

MEASUREMENT

INFORMATION SHEET 6--HOW ARE MEASUREMENTS USED?

I. Length

A. You begin by selecting the proper measuring device for what you need to measure.

1. The distance to the next town would be measured in miles.

2. The length of a football field would be measured in yards.

3. Measuring your head would be done in inches.

4. The length of your house would be done in feet.

B. A combination of the above measuring units may be needed in order to determine the exact length.

II. Weight

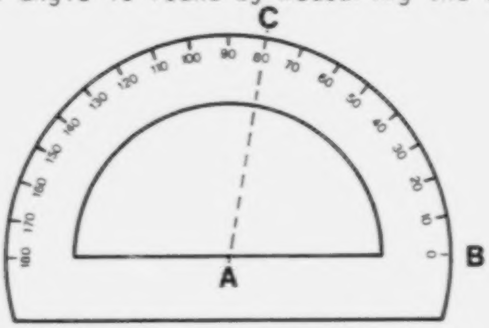
A. The weight of items may need to be determined to the nearest ounce.

B. In working with math problems regarding weight measurement you will need to be able to change pounds to ounces and ounces to pounds.

III. Angles

A. The degree of an angle is found by measuring the angle with a protractor.

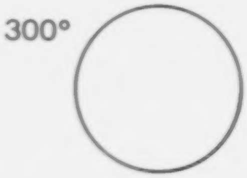
Example:

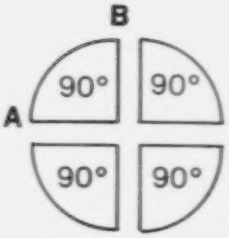


Place the center of the protractor at the vertex. Name the vertex. A ray, AB, goes through 0 on the protractor. Ray AC goes through 80. The measure of angle CAB is 80°.

B. A circle has 360° so if you cut the circle into four equal pieces, you would have four 90° angles.

Example:





IV. Circumference

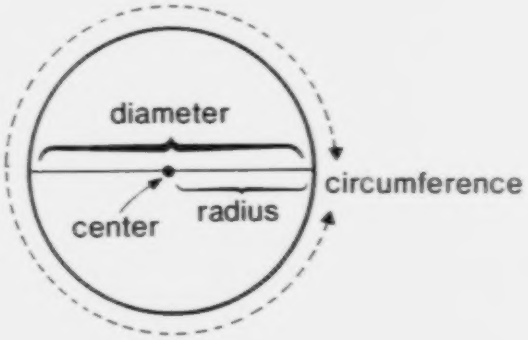
A. The distance around a circle is called the circumference.

B. The distance across a circle is called the diameter.

C. The distance from the middle point of the circle to the outside is called the radius.

D. The formula for finding the circumference of a circle is C = 3.14 x Diameter.

Example:



If the Diameter is 14 in.

$C = 3.14 \times 14 =$
$C = 43.96$

E. The symbol π is used for 3.14 making the formula $C = \pi d$

V. Perimeter

A. The distance around a geometric figure is called the perimeter.

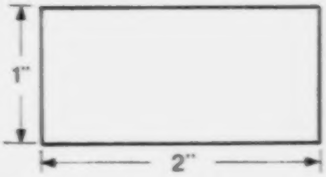
B. The perimeter is found by measuring each side of a figure.

VI. Area

A. The area of a surface is described as the number of square units needed to cover it.

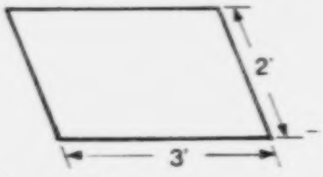
B. The formula for finding the area of a rectangle is $(A = l \times w)$ or length x width.

Example:



Area = 1 x 2 = 2 or 2 square (sq.) inches (in.)

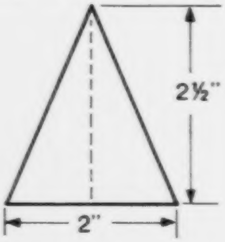
C. The formula for finding the area of a parallelogram is $(A - b \times h)$ or Base x Height.



Area = 2 x 3 = 6 or 6 sq. ft.

D. The formula for finding the area of a triangle is ($A = \frac{1}{2} \times b \times h$) or $\frac{1}{2}$x Base x Height.

Example:



Area = $\frac{1}{2} \times 2 \times 2\frac{1}{2} = 2\frac{1}{2}$ or $2\frac{1}{2}$ sq. in.

E. The formula for finding the area of a circle is ($A = \pi \times r^2$). (Remember: $\pi = 3.14$, and r is the radius of the circle.)

Example #1:

Find the area of a circle having a radius of 6 inches.

r = 6 in.
π = 3.14
A = ?

$A = \pi r^2$
$A = 3.14 \times (6)^2$
$A = 3.14 \times 36$
A = 113.04 sq. in.

Answer: 113.04 sq. in.

$$\begin{array}{r} 6 \\ \times\ 6 \\ \hline 36 \end{array} \qquad \begin{array}{r} 3.14 \\ \times\ 36 \\ \hline 1884 \\ 942 \\ \hline 113.04 \end{array}$$

Example #2:

Find the area of a circle having a diameter of 14 feet. (If diameter is given, divide by 2 to get radius.)

r = 7 ft.
π = 3.14
A = ?

$A = \pi r^2$
$A = 3.14 \times (7)^2$
$A = 3.14 \times 49$
A = 153.86 sq. ft.

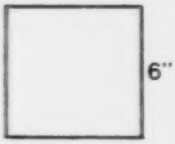
Answer: 153.86 sq. ft.

d = 14 ft.
r = 14 ÷ 2
r = 7

$$\begin{array}{r} 7 \\ \times 7 \\ \hline 49 \end{array} \qquad \begin{array}{r} 3.14 \\ \times\ 49 \\ \hline 2826 \\ 1256 \\ \hline 153.86 \end{array}$$

F. The formula for finding the area of a square is ($A = s \times s$).

Example:



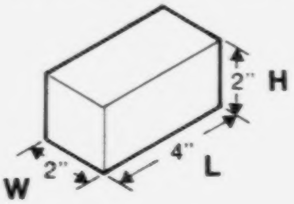
Area = 6 x 6 = 36 sq. in.

VII. Volume

A. The volume of a rectangular solid is the number of cubic units (cubic inches, cubic feet, and so on) it contains.

B. The formula for finding the volume of a rectangular solid is (V = l x w x h) or Length x Width x Height.

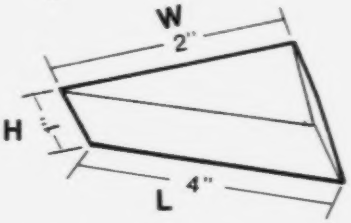
Example:



Volume = 4 x 2 x 2 = 16 cubic inches

C. The formula for finding the volume of a right triangular prism is (V = $\frac{1}{2}$ x l x w x h) or $\frac{1}{2}$ x length x width x height.

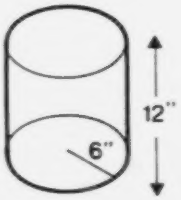
Example:



Volume = $\frac{1}{2}$ x 4 x 2 x 1 = 4 cubic inches.

D. The formula for finding the volume of a cylinder is (V = A x h) or Area x height. (NOTE: Formula for area of circle is $A = \pi r^2$.)

Example:



$A = r^2$
$A = 3.14 \times (6)^2$
$A = 3.14 \times 36$
A = 113.04 sq. in.

Volume = 113.04 x 12 = 1356.48 cubic inches

AREA OF A RECTANGLE

$(A = l \times w)$

or

Length X Width

AREA OF A PARALLELOGRAM

(A=b x h)

or

Base X Height

AREA OF A TRIANGLE

$$(A = \frac{1}{2} \text{ x } b \text{ x } h)$$

or

X base X Height

AREA OF A CIRCLE

$$(A = \pi \times r^2)$$

Remember: $\pi = 3.14$

or

3.14 X Radius Sq.

AREA OF A SQUARE

(A = s x s)

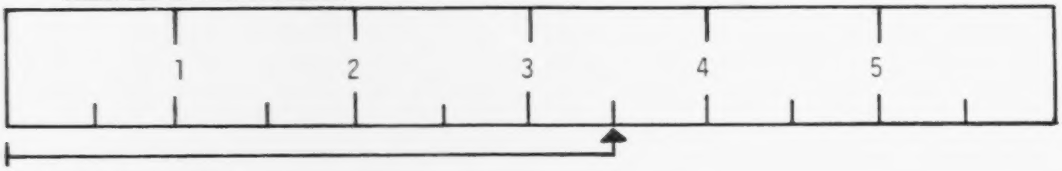
or

Side X Side

MEASUREMENT

ACTIVITY SHEET 13--MEASURING LINE SEGMENTS

Directions: In reading a ruler of English units, learn to recognize whether the ruler is divided into half-inches, quarter-inches, eighths, or sixteenths by counting the parts in one inch. Second, note what size mark the segment ends on: a 1/2 mark, a 1/4 mark, a 1/8 mark, or a 1/16 mark. If necessary, identify the longest, the next longest, and so forth until you come to the size you need. Then count all marks that size or longer beginning from the nearest inch.

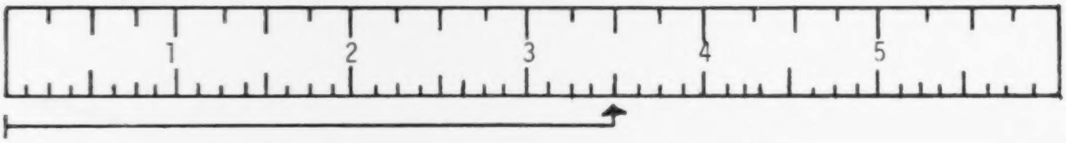


Circle the correct answer.

a. One inch of the ruler is divided into (halves, fourths, eighths, sixteenths).

b. The segment stops on a ($\frac{1}{2}$ inch, $\frac{1}{4}$ inch, $\frac{1}{8}$ inch, $\frac{1}{16}$ inch) mark.

c. The segment is _________ inches long.



Circle the correct answer.

a. One inch of the ruler is divided into (halves, fourths, eighths, sixteenths).

b. The segment stops on a ($\frac{1}{2}$ inch, $\frac{1}{4}$ inch, $\frac{1}{8}$ inch, $\frac{1}{16}$ inch) mark.

c. The segment is _________ inches long.

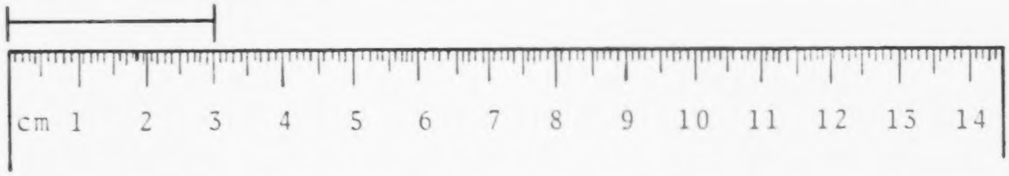
ACTIVITY

MEASUREMENT

ACTIVITY SHEET 14--MEASURING - MILLIMETERS AND CENTIMETERS

REMEMBER: 10 millimeters = 1 centimeter

The length of the line segment below is 30 when the unit of length is millimeters. The length is 3 when the unit of length is centimeters.



Find the lengths of the line segments shown. Use the centimeter and millimeter as units of length.

	Length (mm)	Length (cm)
a. ________________________	_____ mm	_____ cm
b. _________________	_____ mm	_____ cm
c. _____________________________________	_____ mm	_____ cm
d. ______________________________	_____ mm	_____ cm
e. ____________________	_____ mm	___ cm

Match the equivalent lengths by drawing lines as shown.

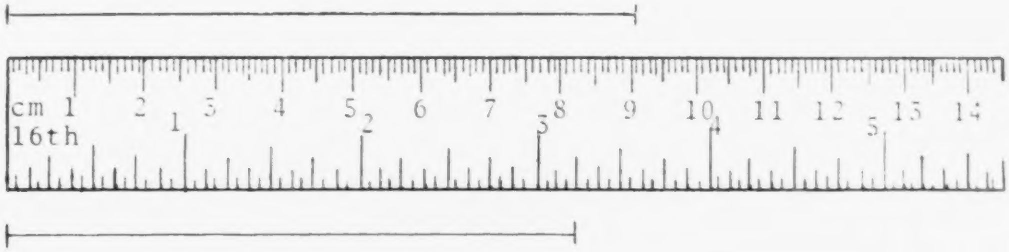
43 mm	52 cm
78 mm	6 cm
135 mm	7.8 cm
520 mm	13.5 cm
60 mm	4.3 cm

ACTIVITY

MEASUREMENT

ACTIVITY SHEET 15--MEASURING: INCHES/CENTIMETERS

The length of this segment is 9 centimeters.



The length of this segment is $3\frac{1}{4}$ inches.

A. Use a ruler to determine if an inch or a centimeter is the unit of length for each segment given below. Circle the correct answer.

	Line Segment	Length	Unit
a.	______________________	2	inch centimeter
b.	____	4	inch centimeter
c.	______________________	5	inch centimeter
d.	_______________________________________	9	inch centimeter

B. Measure each line segment below using the inch scale first and then the centimeter scale of the ruler.

		Inches	centimeters
a.	______________________________	_____	__________
b.	______________________	_____	__________
c.	________________________________	_____	__________
d.	_________________	_____	__________
e.	____	____	__________

UNIT IX

MEASUREMENT

ACTIVITY SHEET 16--MEASURING LENGTH

Directions: Number off 1 to 5 so that each student has a number. All of the ones will form a group, all the twos, etc. Each group will answer the following questions.

1. What is the length of the classroom? ____________________

2. What is the width of the classroom? ____________________

3. How long is the chalkboard? ____________________________

4. How large is the top of a student's desk? _______________

5. How high is the ceiling in the classroom? ______________

6. How tall is your teacher? ________________________________

MEASUREMENT

ACTIVITY SHEET 17--WEIGHT: ADDITION OR SUBTRACTION

Add and simplify:

1. 4 lb. 6 oz.
   5 lb. 8 oz.

2. 6 lb. 4 oz.
   7 lb. 12 oz

3. 7 T. 400 lb.
   3 T. 600 lb.
   5 T. 800 lb.

4. 2 T. 300 lb.
   1500 lb.
   4 T. 600 lb.

5. 1 lb. 4 oz.
   2 lb. 3 oz.
   7 lb. 8 oz.

6. 12 oz.
   6 lb. 10 oz.
   7 lb. 12 oz.

Subtract and simplify:

7. 5 lb. 10 oz.
   - 4 lb. 8 oz.

8. 11 lb. 14 oz.
   - 3 lb. 6 oz.

9. 23 lb. 2 oz.
   - 9 lb. 7 oz.

10. 34 T. 500 lb.
    - 16 T. 200 lb.

11. 6 lb. 3 oz.
    - 2 lb. 10 oz.

12. 26 T. 400 lb.
    - 12 T. 600 lb.

MEASUREMENT

ACTIVITY SHEET 18--WEIGHT: MULTIPLICATION

Multiply and Simplify:

1. 6 lb. 4 oz.
   x 5

2. 8 T. 150 lb.
   x 8

3. 4 T. 200 lb.
   x 6

4. 7 T. 200 lb.
   x 9

5. 3 lb. 12 oz.
   x 4

6. 1 lb. 10 oz.
   x 6

7. 6 lb. 15 oz.
   x 9

8. 5 T. 250 lb.
   x 8

9. 6 T. 700 lb.
   x 7

10. 7 lb. 14 oz.
    x 7

11. 5 lb. 13 oz.
    x 9

12. 8 T. 1750 lb.
    x 5

MEASUREMENT

ACTIVITY SHEET 19--WEIGHT: PROBLEMS

1. Sixteen carrots weigh 143 grams. What is the weight of an "average carrot"? __________

2. Candy bars weigh 3.1 ounces. Find the total weight of a box of 24 bars. __________

3. The biggest meteor ever found is estimated to weight (20 x 70 x 100) pounds. How many pounds is this? __________

4. Find the cost of 3 oz. of candy at $1.20 per lb. __________

5. Find the cost of 10 oz. of meat at $.96 lb. __________

6. How many 4 oz. boxes of cookies can be made from a 9 lb. box. __________

7. How many 6 oz. packages of pretzels can be made from a 6 lb. can? __________

MEASUREMENT

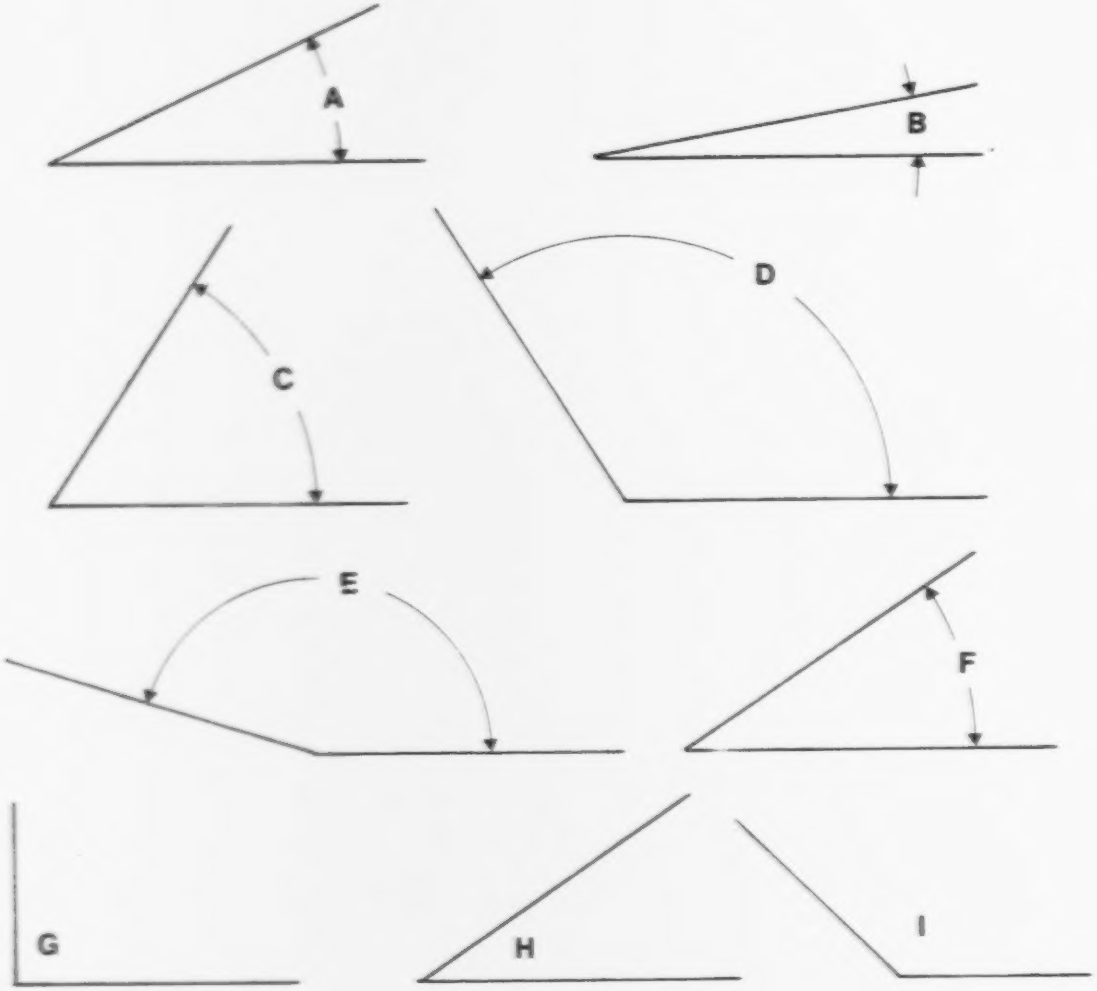
ACTIVITY SHEET 20--ANGLES: DRAWING AND MEASURING

1. Complete these drawings.

   a. Draw an angle and label this angle with: vertex, side, side.

   b. Draw an angle and place the letter B at the vertex.

2. Measure the following angles and state their size in degrees. You should be correct to within 3°.



ACTIVITY

MEASUREMENT

ACTIVITY SHEET 21--GAME: ANGLES

Materials: Student protractors
Record player or tape player
Deck of Angle cards. (Make as many cards as needed by drawing an angle on each one and numbering the card. Keep a key to the measures.)

Procedure: Place the cards angle side down on the desks around the room. Each student will have a protractor, pencil, and a sheet of paper appropriately numbered. When the music starts, each student will measure the angle on the card at his desk and record it opposite the correct number on his paper. When the music stops, the students will move to the next desk and repeat the procedure.

Example: Key: #1 - 45°

(#1)

Numbered side

#1

Angle side

****

Make a deck of cards similar to the following examples:

Was it possible
for these 3 angles
to form a triangle:

100°, 90°, 11°?

Construct a triangle
with following angles:

90°, 60°, 30°

What is the missing
angle needed to form
a triangle?

39°, 39°, _____?

Draw an angle of

90°

Have each student draw a card and place his answer on the chalkboard.

MEASUREMENT

ACTIVITY SHEET 22--DRAWING ANGLES

Directions: Draw angles of the following sizes. You should be correct to within 2°.

1. 90°

2. 60°

3. 30°

4. 45°

5. 20°

6. 15°

7. 7°

8. 87°

9. 62°

10. 50°

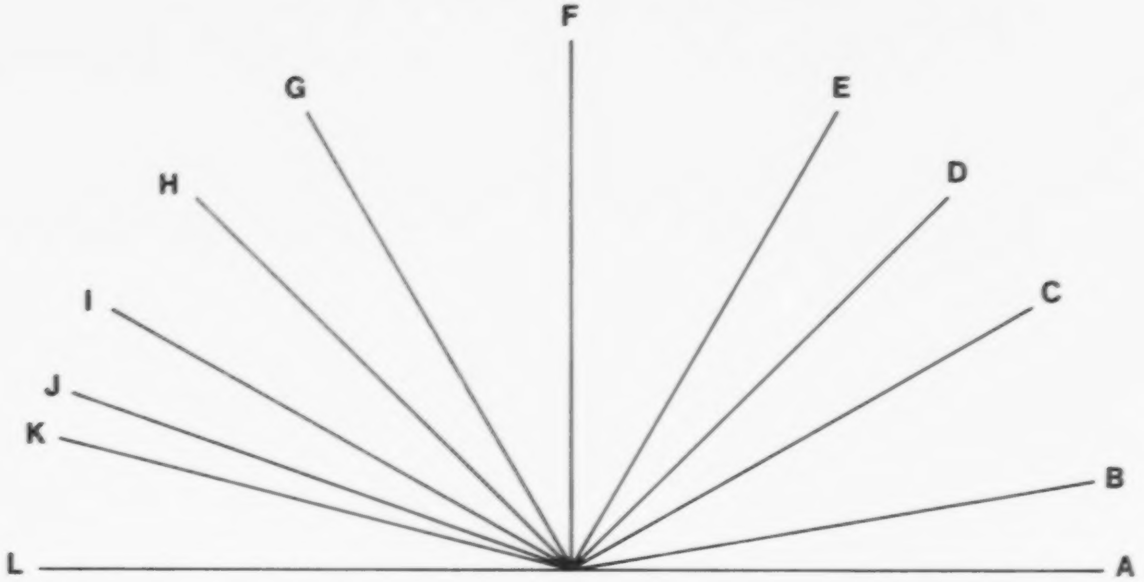
11. 140°

12. 150°

13. 180°

MEASUREMENT

ACTIVITY SHEET 23--MEASURING ANGLES



Use a protractor to measure each angle named below. In the space, write the number of degrees.

AOB = ____________

AOC = ____________

AOD = ____________

AOE = ____________

AOF = ____________

AOG = ____________

AOH = ____________

AOI = ____________

AOJ = ____________

AOK = ____________

BOC = ____________

BOG = ____________

BOJ = ____________

BOK = ____________

DOF = ____________

DOG = ____________

DOI = ____________

EOF = ____________

EOJ = ____________

FOH = ____________

GOE = ____________

GOC = ____________

JOC = ____________

KOJ = ____________

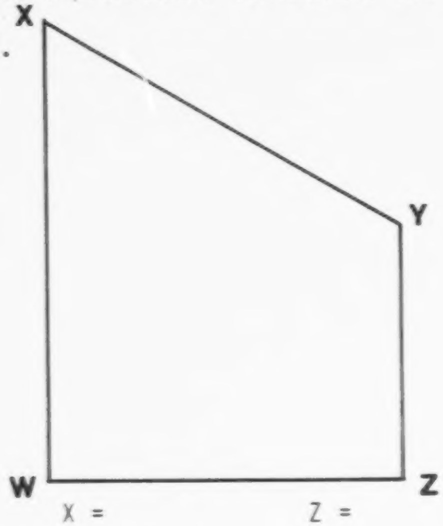
LOA = ____________

MEASUREMENT

ACTIVITY SHEET 24--ANGLE MEASURE

Use a protractor to measure the angles in each figure.

1.



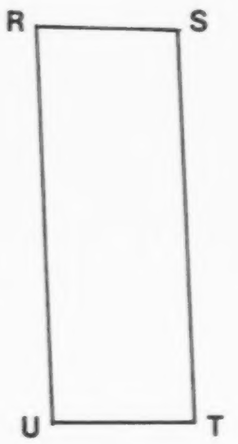
X =

Z =

Y =

W =

2.



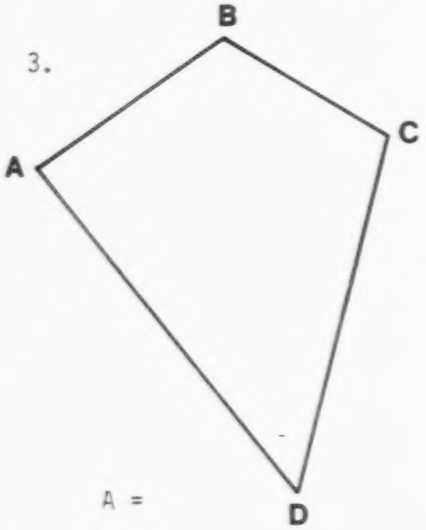
R =

T =

S =

U =

3.



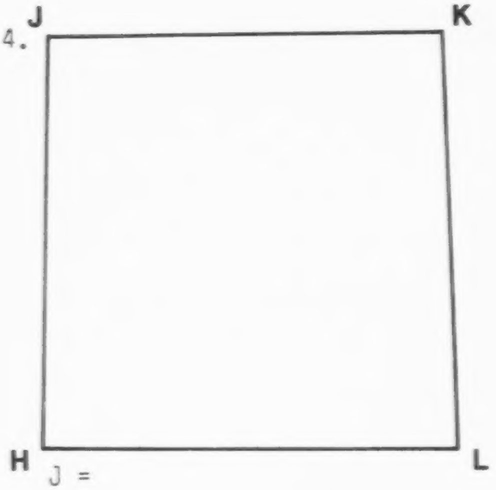
A =

B =

C =

D=

4.



J =

K =

L =

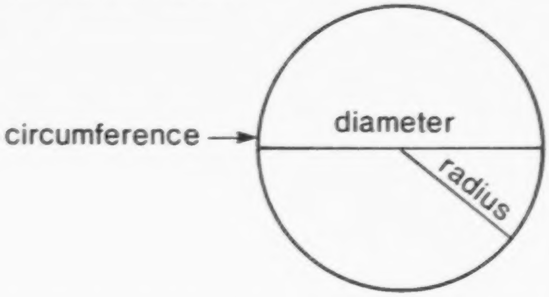
H =

From the above measures, what do you believe to be true about the number of degrees in a four-sided figure?

MEASUREMENT

ACTIVITY SHEET 25--CIRCUMFERENCE

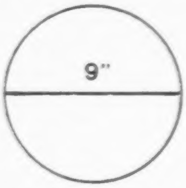
The circumference of a circle is the distance around the circle. To understand how to find the distance around the circle, we have to learn the parts of the circle. Study the parts of the circle below.



Notice that the diameter is twice the radius. The circumference is a little more than 3 times as long as the diameter. This constant ratio is represented by the Greek letter π (called pi), which equals 3.14. The circumference of the circle is equal to pi (π) times the diameter. The formula is $c = \pi d$ or $c = 2\pi r$ (since $d = 2r$).

Example #1 (when the diameter is given)

Find the circumference of a circle whose diameter is 9 inches.



$c = \pi \times d$
$c = 3.14 \times 9$
$c = 28.26$ in.

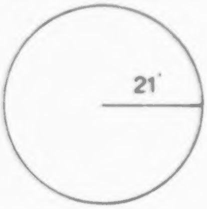
$$\begin{array}{r} 3.14 \\ \times\ 9 \\ \hline 28.26 \end{array}$$

$d = 9$ in.
$\pi = 3.14$
$c = ?$

Answer: 28.26 in.

Example #2 (when the radius is given)

Find the circumference of a circle whose radius is 21 ft. (If radius is given, multiply radius times two to get diameter.)



$r = 21$ ft.
$d = 42$ ft.
$c = ?$

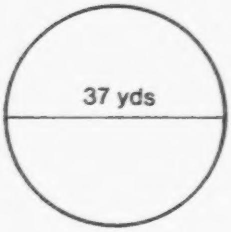
$c = \pi \times d$
$c = 3.14 \times 42$
$c = 131.88$ ft.

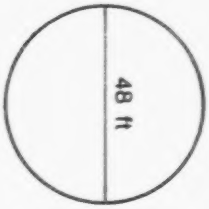
$$\begin{array}{r} 3.14 \\ \times\ 42 \\ \hline 6\ 28 \\ 125\ 6 \\ \hline 131.88 \end{array}$$

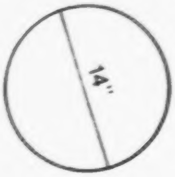
$r = 21$
$d = 2 \times 21$
$d = 42$

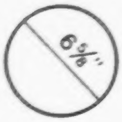
Answer: 131.88 ft.

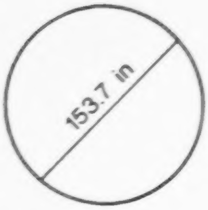
Find the circumference of the following circles (round off to nearest hundredth):





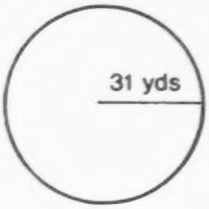


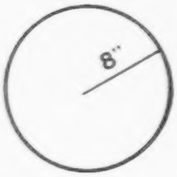


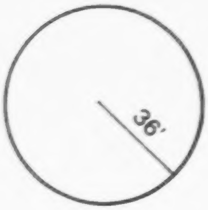


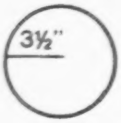
1. ______ 2. ______ 3. ______ 4. ______ 5. ______

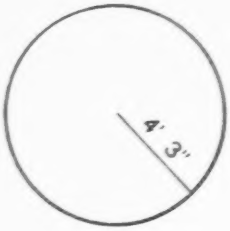
Measure the diameter in the following circles; then find the circumference.





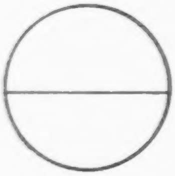


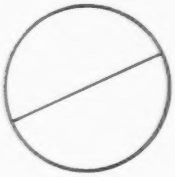


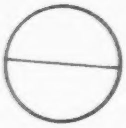


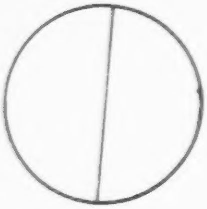
6. ______ 7. ______ 8. ______ 9. ______ 10. ______

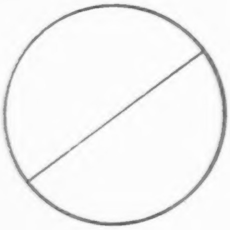
Measure the diameter in the following circles; then find the circumference.





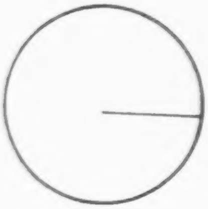


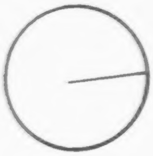


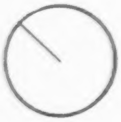


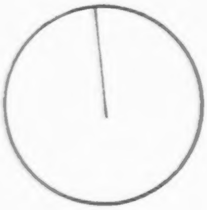
11. ______ 12. ______ 13. ______ 14. ______ 15. ______

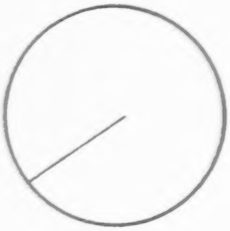
Measure the radius in the following circles; then find the circumference.











16. ______ 17. ______ 18. ______ 19. ______ 20. ______

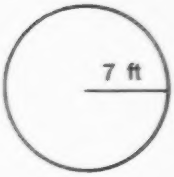
UNIT IX

MEASUREMENT

ACTIVITY SHEET 26--CIRCLES

In each of the following problems: (a) what is the radius? (b) what is the diameter?

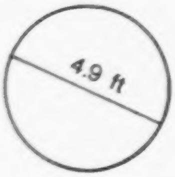
1.



(a) ______

(b) ______

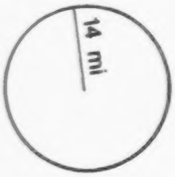
2.



(a) ______

(b) ______

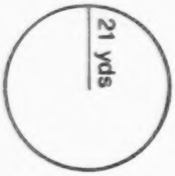
3.



(a) ______

(b) ______

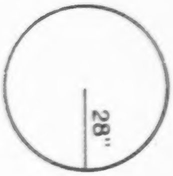
4.



(a) ______

(b) ______

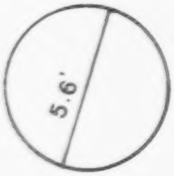
5.



(a) ______

(b) ______

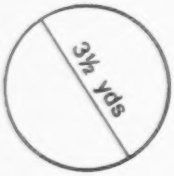
6.



(a) ______

(b) ______

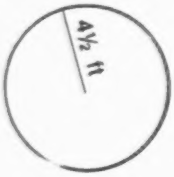
7.



(a) ______

(b) ______

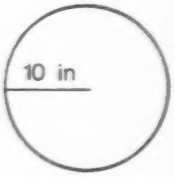
8.



(a) ______

(b) ______

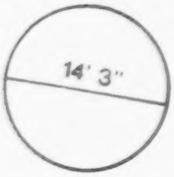
9.



(a) ______

(b) ______

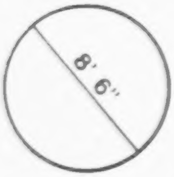
10.



(a) ______

(b) ______

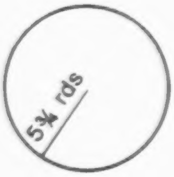
11.



(a) ______

(b) ______

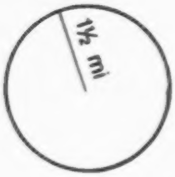
12.



(a) ______

(b) ______

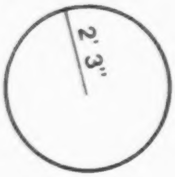
13.



(a) ________

(b) ________

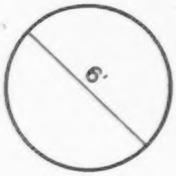
14.



(a) ________

(b) ________

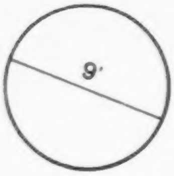
15.



(a) ________

(b) ________

16.



(a) ______

(b) ______

MEASUREMENT

ACTIVITY SHEET 27--PERIMETER

1. A 9-inch wire is bent into the shape of a circle. What is the diameter of this circle? __________

2. How many linear feet of base and base shoe combined are required for a room 15' x 18' with two doors, allowing 3 feet per door? __________

3. How many linear feet of 1" x 4" will be required to make a form for a flower bed if the landscape plans show a diameter of 24 feet? __________

4. Compute the length of metal edging needed for a square table, length of one side 4 ft. $8\frac{1}{2}$ in. __________

5. Find the approximate length of metal edge for a table of rectangular shape, 2 ft. $6\frac{1}{4}$ in. x 6 ft. $9\frac{7}{8}$ in. __________

6. Find the length of a band of iron in feet and inches to go around a circular tank if the average diameter of the tank is 10 ft. $6\frac{1}{2}$ in. __________

7. The measurement between two windows in a brick garage is 54." How many feet and inches does this represent? __________

8. What is the perimeter of a rectangle if its length is 46 inches and width 22 inches? __________

9. How many feet of fencing are required to enclose a rectangular garden 52 ft. long and 39 ft. wide? If each 7-foot section costs $3.69, how much will the fencing cost? __________ __________

10. How many yards of fringe are needed for a border on a bedspread 72 in. by 108 in.? (Note: Only three edges will be fringed.) __________

11. Fred wishes to make a frame for his class picture. The picture measures 24 in. by $12\frac{1}{2}$ in. If he allows $1\frac{3}{4}$ inches extra for each corner, how many feet of molding will he need? __________

12. At 6¢ per foot, what is the total cost of weatherstripping for 5 window frames, each measuring 32 in. by 66 in.; 3 window frames, each measuring 24 in. by 58.; and 2 doorways, each measuring 43 in. by 78 in.? __________

13. Which rectangular lot will take more fencing to enclose it, lot A, 135 ft. long and 93 ft. wide, or lot B, 124 ft. long and 101 ft. wide? How much more fencing? __________ __________

14. Find the cost of the wire needed to make a fence of 5 strands around a square lot 128 ft. by 128 ft. if an 80-rod spool of wire costs $7.65. (Note: 1 rod = $16\frac{1}{2}$'). __________

15. How many feet of hedge are needed to enclose a triangular lot with sides measuring 198 feet, 209 feet, and 187 feet? __________

16. How many bricks, each 8 inches long, are needed to enclose a triangular vegetable patch with sides measuring 11 ft. 4 in., 8 ft. 11 in., and 7 ft. 9 in.? At $.08 per brick, how much will they cost? __________ __________

17. If the diameter of a circular table is 49 inches, what is the circumference of the table? __________

18. What distance in feet does the tip of a propeller travel in one revolution if its length (diameter) is 7 feet. __________

19. How long a metal bar do you need to make a basketball hoop with a diameter of 18 inches. __________

20. How much farther do you ride in one turn of a merry-go-round if you sit in the outside lane, 21 ft. from the center, than if you sit in the inside lane, 14 ft. from the center? __________

21. If the diameter of each wheel is 28 inches, how far does a bicycle go when the wheels revolve once? How many times do the wheels revolve in a distance of 1 mile? (1 mile = 5280 ft.) __________ __________

22. What should the diameter of a circular track be if the mile is to be run in 18 laps around the track? __________

23. Mr. Jones has 100 feet of wire for a fence. His rectangular yard is 20 feet wide and 30 feet long. Does he have enough fencing for the yard? __________

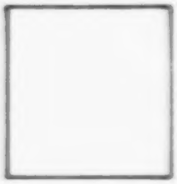
24. The distance between each of the four bases of a baseball diamond is 90 feet. If a player hits a home run, how far does he have to run around the bases? __________

25. The Chiefs play football on a field that is 300 feet long and 120 feet wide. Find the perimeter of the field. __________

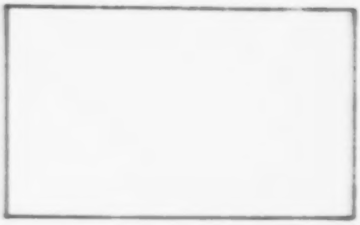
MEASUREMENT

ACTIVITY SHEET 28--PERIMETER: METRIC UNITS

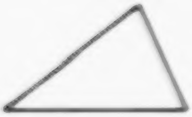
1. Use the centimeter scale of a ruler to find the perimeter of each figure below.



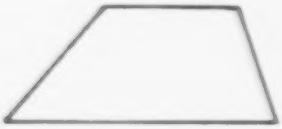
(a) ____________



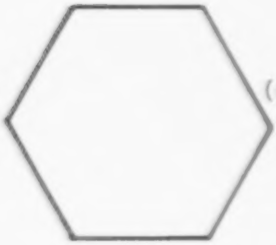
(d) _____



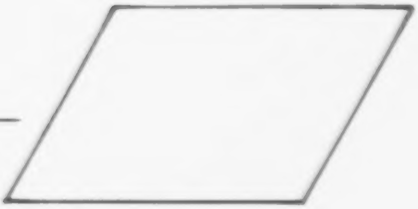
(b) ____________



(e) _____

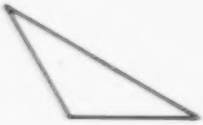


(c) ____________

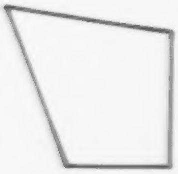


(f) _____

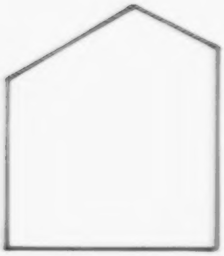
2. Find the perimeter of each of these figures by measuring to the nearest millimeter.



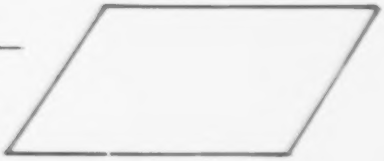
(a) _____



(c) _____



(b) _____



(d) _____

MEASUREMENT

ACTIVITY SHEET 29--PERIMETER: SQUARE AND RECTANGLE

1. In order to find the perimeter of a square, must you measure each one of the four sides? Why or why not?

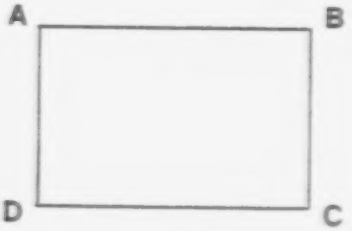
2. (a) If the measure of one side of a square is 5 inches, what is the measure of each of the other sides? ________________

   (b) What is the perimeter of the square? ________________

3. Explain how to find the perimeter of a 7-inch square.

4. In order to find the perimeter of a rectangle, must you measure each one of the four sides? Why or why not?

The figure at the right represents a rectangle.



5. If side AB is 6 inches long, which other side must measure 6 inches? ______

6. If side AD is 4 inches long, which other side must measure 4 inches? ______

7. Find the perimeter of rectangle ABCD.

8. Explain how to find the perimeter of a rectangle 8 ft. long and 5 ft. wide.

MEASUREMENT

ACTIVITY SHEET 30--PERIMETER: MEASURES GIVEN

The following table lists the length and width of various rectangles. Find the perimeter of each rectangle.

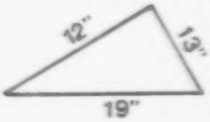
	Length	Width	Perimeter
1.	12'	11 feet	
2.	24 inches	16 inches	
3.	8 yards	3 yards	
4.	4 feet	3 feet	
5.	7 feet	4 feet	

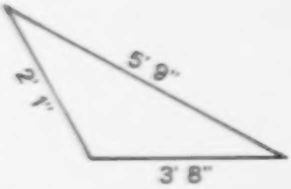
MEASUREMENT

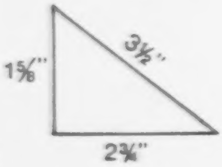
ACTIVITY SHEET 31--PERIMETER: DIMENSIONS GIVEN

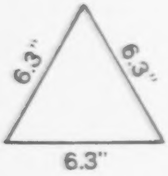
Find the perimeter of triangles with the following dimensions.

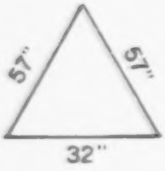
(a)________ (b)________ (c)________ (d)________ (e)________





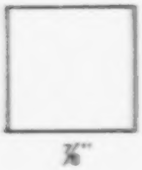


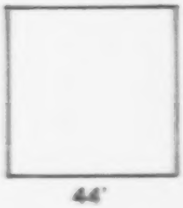


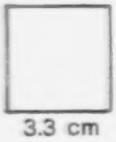


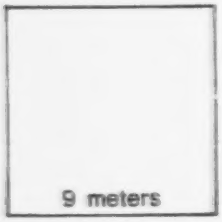
Find the perimeters of squares whose sides have the following measures.

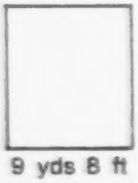
(f)________ (g)________ (h)________ (i)________ (j)________





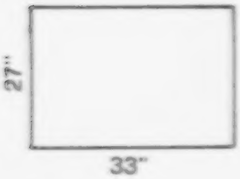


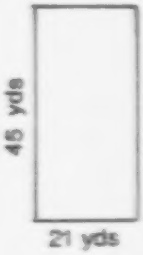


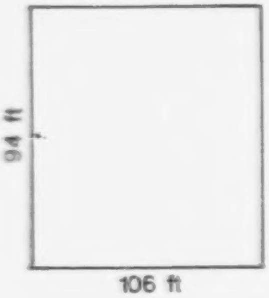


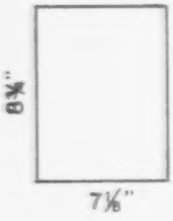
Find the perimeters of rectangles whose sides have the following measures.

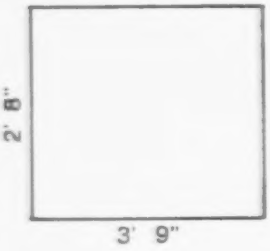
(k)________ (l)________ (m)________ (n)________ (o)________




45 yds
21 yds







Work the following problems.

1. If 3 feet are to be deducted for a doorway, how many feet of baseboard are needed for a room 15 feet long and 12 feet wide? ________

2. How many yards of linoleum border are needed for a kitchen floor 10 feet by 9 feet? ________

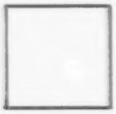
3. Joan wishes to sew ribbon around her school pennant which measures $29\frac{1}{2}$ in., $29\frac{1}{2}$ in., and 13 in. How many yards of ribbon will she need? At $.30 a yard, how much will the ribbon cost? ________ ________

MEASUREMENT

ACTIVITY SHEET 32--AREA OF A SQUARE

You may use the formula $A = l \times w$ to find the area of a square, but we generally use the formula $A = s^2$ where s is the length of a side of the square. Since the length and width of a square are both equal to the length of a side, s, the formula $A = lw$ becomes $A = s \times s$ or $A = s^2$.

Example: Find the area of a square whose side is 42 ft.



$s = 42'$
$A = ?$

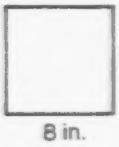
$A = s^2$
$A = (42)^2$
$A = 42 \times 42$
$A = 1{,}764$ sq. ft.

$$\begin{array}{r} 42 \\ \underline{\times\ 42} \\ 84 \\ \underline{168} \\ 1764 \end{array}$$

Answer: 1,764 sq. ft.

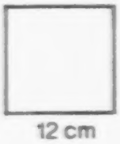
Calculate the area for each square.

1.



____

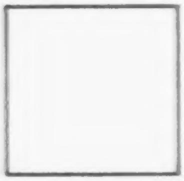
2.



____

First measure the length of a side in centimeters, then find the area of each of the following squares.

3.



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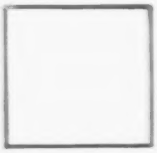
4.



____

Find the area of a square whose side measures:

5. s = 35 miles

____

6. s = 1 yd. 2 in.

____

7. s = 8.7 yds.

____

8. $s = 9\frac{3}{4}$ in.

____

ACTIVITY

MEASUREMENT

ACTIVITY SHEET 33--AREA OF A RECTANGLE

To find the area of a rectangle, multiply the length by the width. Use the formula A = l x w.

Example: Find the area of a rectangle 13 inches long and 9 inches wide.

l = 13"
w = 9"
A = ?

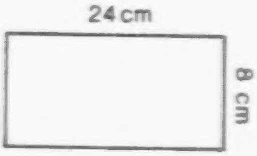
A = l x w
A = 9 x 13
A = 117 sq. in.

$$\begin{array}{r} 13 \\ \times 9 \\ \hline 117 \end{array}$$

Answer: 117 sq. in.

Calculate the area for each rectangle.

1.



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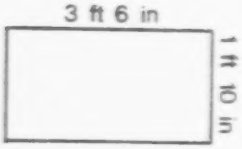
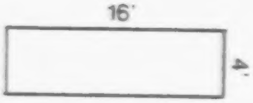
2.



____

3.



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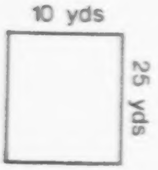
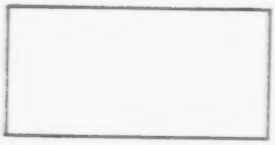
4.



____

First measure the length of a side in inches, then find the area of each of the following rectangles.

5.



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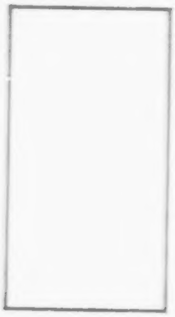
6.



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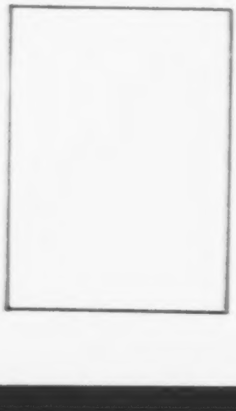
7.



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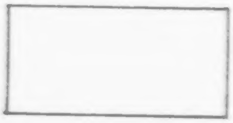
8.



____

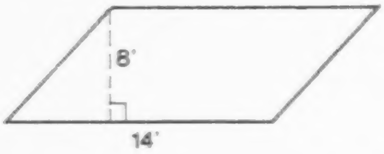
MEASUREMENT

ACTIVITY SHEET 34--AREA OF PARALLELOGRAMS

ACTIVITY

We find the area of a parallelogram by using the formula A = b x h where b is the length of the base and h is the height of the parallelogram.

Example: Find the area of a parallelogram whose base is 14' long and whose height is 8' long.

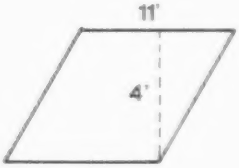


A = b x h
A = 14 x 8
A = 112 sq. ft.

b = 14'
h = 8'

Calculate the area for each parallelogram.

1.



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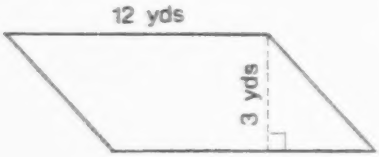
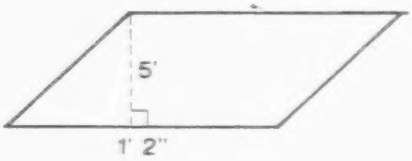
2.



____

3.



____

4. b = 6', h = 12' __________

5. b = $8\frac{1}{4}$" , h = $6\frac{1}{2}$" __________

6. b = 1.3 yds., h = .7 yds. __________

7. b = $\frac{1}{4}$', h = $\frac{2}{3}$' __________

UNIT IX

MEASUREMENT

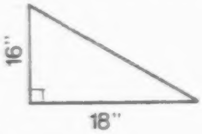
ACTIVITY SHEET 35--AREA OF A TRIANGLE

ACTIVITY

We find the area of a triangle by using the formula $\frac{b \times h}{2}$, where b is the length of the base and h is the height of the triangle.

Example:

Find the area of a triangle whose base is 18 in. and whose height is 16 in.

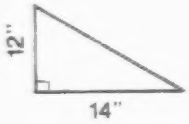


b = 18"
h = 16"
A = ?

$$A = \frac{b \times h}{2}$$
$$A = \frac{18 \times 16}{2}$$
$$A = \frac{288}{2}$$
A = 144 sq. in.

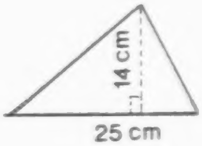
Calculate the area for each triangle.

1.



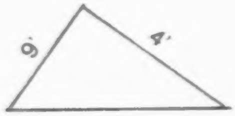
____

2.



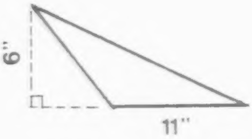
____

3.



____

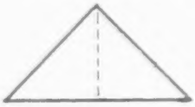
4.



____

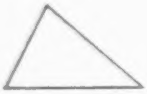
First measure the height and base; then find the area of each of the following triangles. Measurements are to be made in inches.

5.



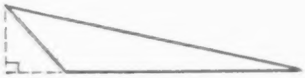
base =
height =
area =

6.



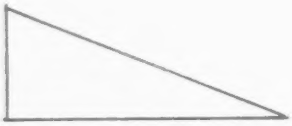
base =
height =
area =

7.



base =
height =
area =

8.



base =
height =
area =

MEASUREMENT

ACTIVITY SHEET 36--AREA OF A CIRCLE

We find the area of a circle by using the formula $A = \pi \times r^2$. Remember $\pi = 3.14$, while r is the radius of the circle.

Find the area of a circle having a radius of:

1. 63 in.
2. 20 ft.
3. 45 miles
4. 28 yds.
5. $3\frac{1}{2}$ ft.
6. 4'2"

Find the area of a circle having a diameter of:

7. 3'
8. 81"
9. 50 yds.
10. 42'
11. $16\frac{1}{4}$ ft.
12. 12'6"

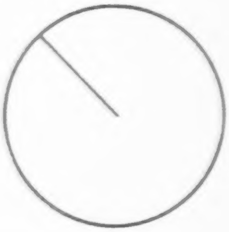
For all problems below, use as $\frac{22}{7}$.

Find the area of a circle having the given dimensions:

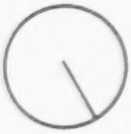
13. radius = $5\frac{1}{4}$'
14. diameter = 112 yds.
15. diameter = 8.4 mi.

Measure the radius (use inches) then find the area of each of the following circles.

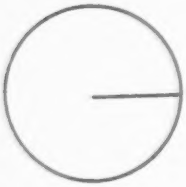
16.



17.

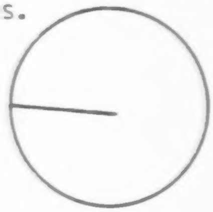


18.

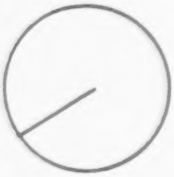


Measure the diameter (use inches) then find the area of each of the following circles.

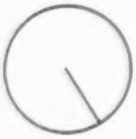
19.



20.



21.

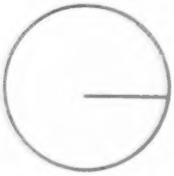


MEASUREMENT

ACTIVITY SHEET 37--CIRCLES

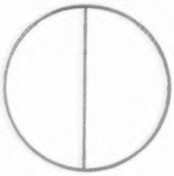
Find the areas and perimeters of the following circles.

1.



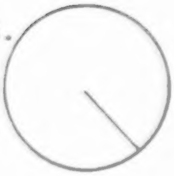
(a) ______
(b) ______

2.



(a) ______
(b) ______

3.



(a) ______
(b) ______

Find the information requested:

4. What is the cooking area of a circular barbecue grill having a diameter of 24"? ______

5. A revolving sprinkler sprays a lawn for a distance of 12' in all directions. How many square feet does the sprinkler water in one revolution? ______

6. If the lookout in the "crow's nest" of a ship can see for a distance of 9 miles, over how many square miles can he observe? ______

7. Over how many square miles can a T.V. program be viewed if the station can televise programs for a distance of 42 miles in all directions? ______

8. The dial of one of the world's largest clocks has a diameter of 9'. What is the area of the dial? ______

9. What is the area of one side of a penny? quarter? half dollar? (Make the necessary measures and compute the area. Use millimeters.) ______

ACTIVITY

MEASUREMENT

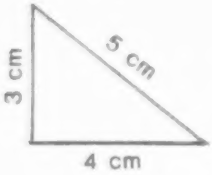
ACTIVITY SHEET 38--GEOMETRIC FIGURES

(a) Name the kind of geometric figure.

(b) Find the area.

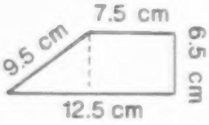
(c) Find the perimeter.

1.



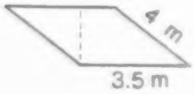
(a) ______
(b) ______
(c) ______

2.


7.5 cm
9.5 cm
6.5 cm
12.5 cm

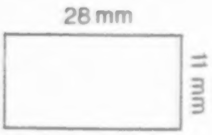
(a) ______
(b) ______
(c) ______

3.



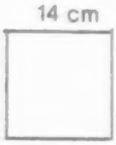
(a) ______
(b) ______
(c) ______

4.



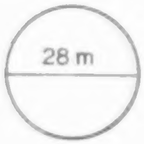
(a) ______
(b) ______
(c) ______

5.



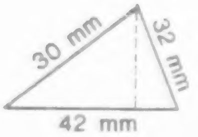
(a) ______
(b) ______
(c) ______

6.



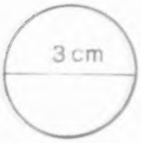
(a) ______
(b) ______
(c) ______

7.


30 mm
32 mm
42 mm

(a) ______
(b) ______
(c) ______

8.



(a) ______
(b) ______
(c) ______

UNIT IX

MEASUREMENT

ACTIVITY SHEET 39--PROBLEMS

1. How many square yards of carpeting are required to cover a room measuring 13 ft. by 13 ft.? ________

2. How many square yards of tarpaulin are needed to cover the infield of a baseball diamond if the distance between bases is 90 feet? ________

3. How many square feet of ground is left over when a building 115 ft. square is built on a lot 175 ft. square? ________

4. Find the cost of covering a floor 9 ft. by 9 ft. with linoleum @ $2.54 per square yard? ________

5. A florist's experimental hot-bed, which measures 6 ft. by 6 ft., is found to be sufficiently heated by a lead-covered hot-bed cable that consumes 180 watts. How many watts are used per square foot of hot-bed area? ________

UNIT IX

MEASUREMENT

ACTIVITY SHEET 40--VOLUME: BY COUNTING

a. How many cubic inches would it take to fill 1 layer?

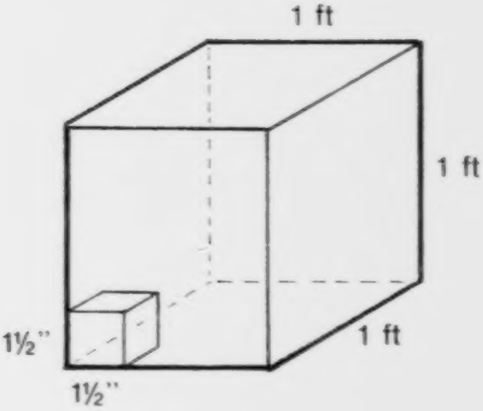
____

b. How many layers to fill the box?

____

c. How many cubic inches are in 1 cubic foot?

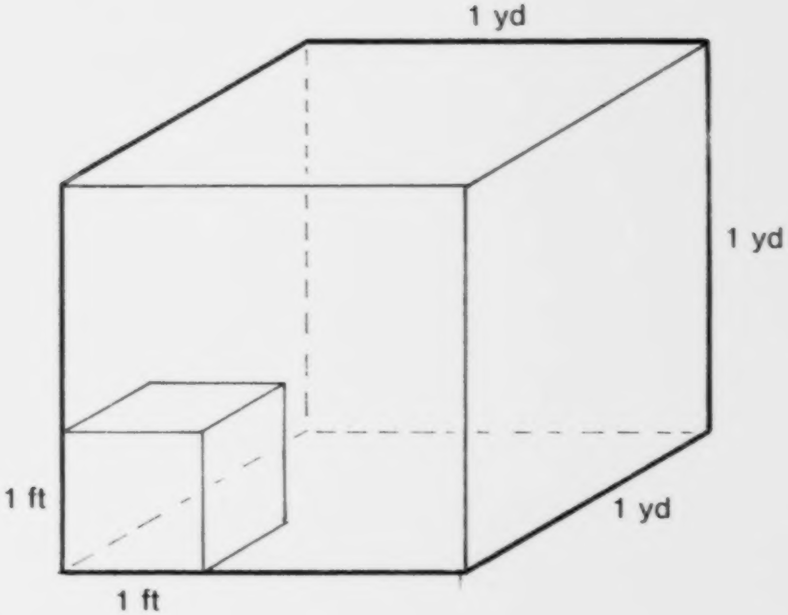
____


1 ft
1 ft
1½"
1 ft
1½"

ACTIVITY

How many cubic feet are in 1 cubic yard?

d. ______________________________


1 yd
1 yd
1 ft
1 yd
1 ft

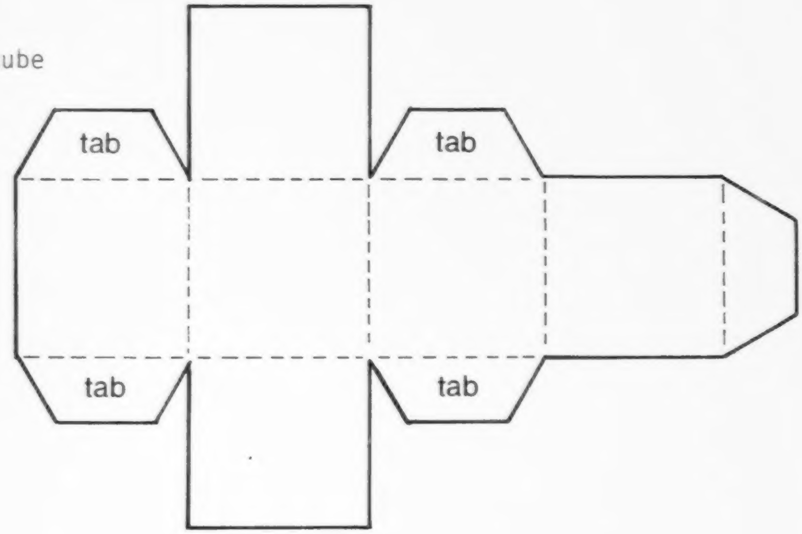
ACTIVITY SHEET 41--CONSTRUCTION

Make a cubic inch by:

a. Cutting out the figure at right

b. Fold on dotted lines

c. Glue tabs to form a cube



Get a group of classmates together and collect your cubes to complete this exercise.

a. Let each cube represent a cubic foot.

b. Make a pile of cubic feet forming a cubic yard.

c. Construct a figure that is 4 cubes long, 3 cubes wide and 2 cubes high. What is the volume of the figure you have constructed? ______________________

d. Construct a different shaped figure with the same volume as that in c.

What are its dimensions? l = _____ w = _____ h = _____

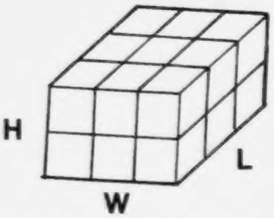
(There is more than one right answer.)

MEASUREMENT

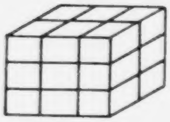
ACTIVITY SHEET 42--VOLUME: BY COUNTING

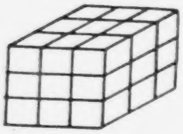
Directions: Count the cubic units to determine the volume of each of the following figures.

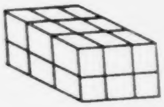
Example:

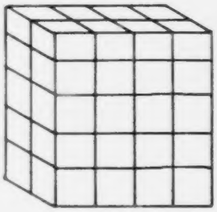


a. In the top layer, there are 9 cubes.
b. The figure has two layers.
c. Therefore, the volume of this solid rectangular figure is eighteen cubic units.

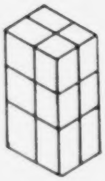
1.


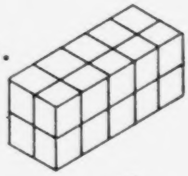
2.


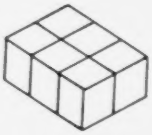
3.


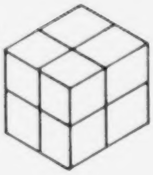
4.


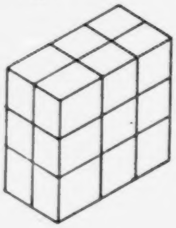
ACTIVITY

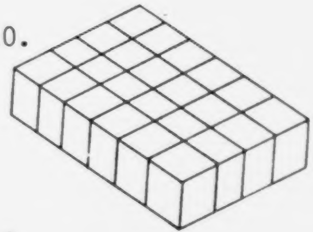
5.


6.


7.


8.


9.


10.


1. ____________ 2. ____________ 3. ____________ 4. ____________

5. ____________ 6. ____________ 7. ____________ 8. ____________

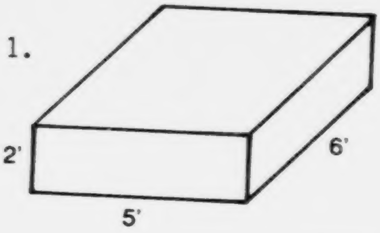
9. ____________ 10. ____________

MEASUREMENT

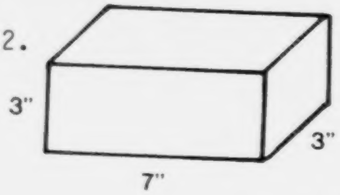
ACTIVITY SHEET 43--VOLUME: RECTANGULAR SOLIDS

Directions: Use the formula V = lwh to calculate these volumes.

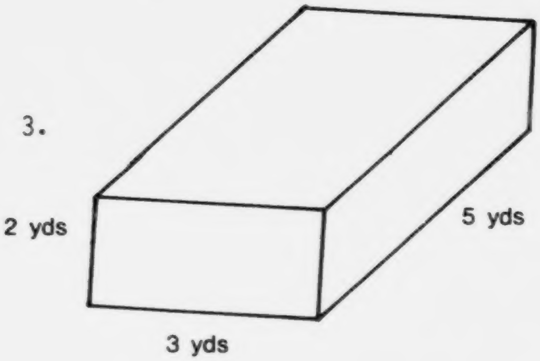
1.



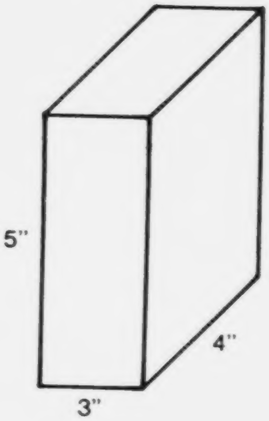
2.



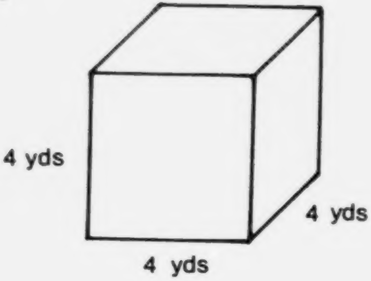
3.


2 yds
5 yds
3 yds

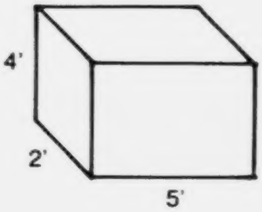
4.



5.


4 yds
4 yds
4 yds

6.



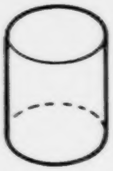
UNIT IX

MEASUREMENT

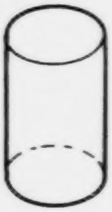
ACTIVITY SHEET 44--VOLUME: CYLINDERS

Find the volume of the cylinders given below:

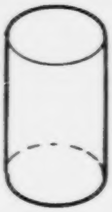
1.



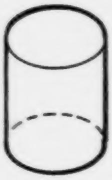
2.



3.



4.



5. Find the volume of cylinders having the following dimensions.

(a) radius = 7"
height = 12"

(b) radius = 35 cm
height = 10 cm

(c) radius = 2 ft. 4 in.
height = 8'

(d) diameter = 21 cm
height = 14 cm

(e) diameter = 10 m
height = 22 m

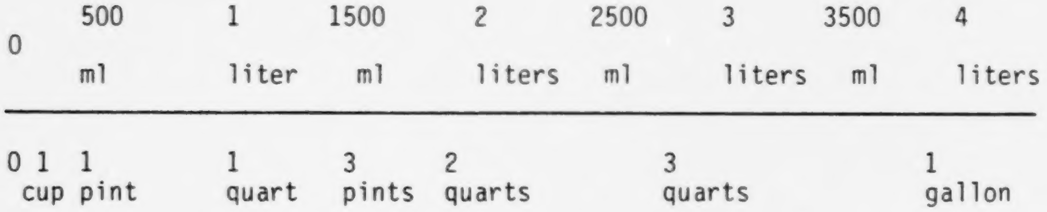
(f) diameter = 98 ft.
height = 6 ft.

ACTIVITY

UNIT IX

MEASUREMENT

ACTIVITY SHEET 45--COMPARING ENGLISH AND METRIC VOLUME UNITS


0
500 ml
1 liter
1500 ml
2 liters
2500 ml
3 liters
3500 ml
4 liters
0
1 cup
1 pint
1 quart
3 pints
2 quarts
3 quarts
1 gallon

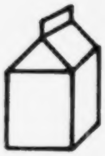
Put an X on the measurement line for each measure.

1 cup	3 cups	2 pints
$1\frac{1}{2}$ liters	$2\frac{1}{2}$ quarts	8 cups
2.8 liters	495 milliliters	3550 milliliters

Use the measurement line to estimate the metric measure for each English measure.

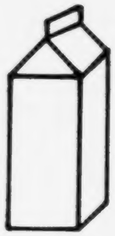
1 cup

______



1 pint

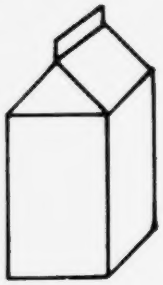
______



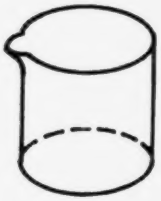
1 quart

______

Use the measurement line to estimate the English measure for each metric measure.


Milk
1.9
liters

______ quarts



______ quarts

UNIT IX

MEASUREMENT

ACTIVITY SHEET 46--VOLUME: CHANGING MEASURES

Volume can also be measured in gallons, bushels or pounds. It is more convenient to express volumes of liquids in terms of gallons, volumes of dry measures such as berries or grains, in terms of bushels, and volumes of weight such as steel bars, iron rods, cakes of ice, etc. in terms of pounds.

The following relationships are useful.

1 gallon = 231 cubic inches

$7\frac{1}{2}$ gallon = 1 cubic foot

1 bushel = $1\frac{1}{4}$ cubic feet

1 liter = 1000 cubic centimeters

Find the equivalent:

Capacity in gallons:

1. 3003 cu. in. = _____
2. 40 cu. ft. = ______
3. 100 cu. in. = ______

Capacity in bushels:

4. 50 cu. ft. = ______
5. 365 cu. ft. = ______
6. 34 cu. yd. = ______

Volume in cubic feet:

7. 90 gal. = ______
8. 1,200 gal. = ______
9. 228 bu. = ______

Capacity in inches:

10. 36 gal. = ______
11. 8 bu. = ______
12. 5 cu. yd. = ______

UNIT IX

MEASUREMENT

INFORMATION SHEET 7--TEMPERATURE

I. The instrument used to measure temperature is called a thermometer.

II. There are two thermometers used.

- A. Fahrenheit (F.)
- B. Celcius, also called Centigrade

III. The Fahrenheit thermometer is used in the United States.

- A. Freezing occurs at 32°.
- B. The boiling point of water is 212°.
- C. The number of degrees from freezing point to boiling point is $212^{\circ} - 32^{\circ} = 180^{\circ}$.

IV. The Celcius or Centigrade is on a decimal scale (a scale of 10).

- A. Freezing is the zero point (0°).
- B. Boiling water is 100 degrees (100°).
- C. The Centigrade thermometer is used in laboratory work.

V. Centigrade can be changed to Fahrenheit.

- A. Multiply the Centigrade degrees by 9.
- B. Divide the product by 5.
- C. Add 32.

Example: Change 35° Centigrade to degrees Fahrenheit.

$$(35 \times \frac{9}{5}) + 32 = 95^{\circ}F.$$

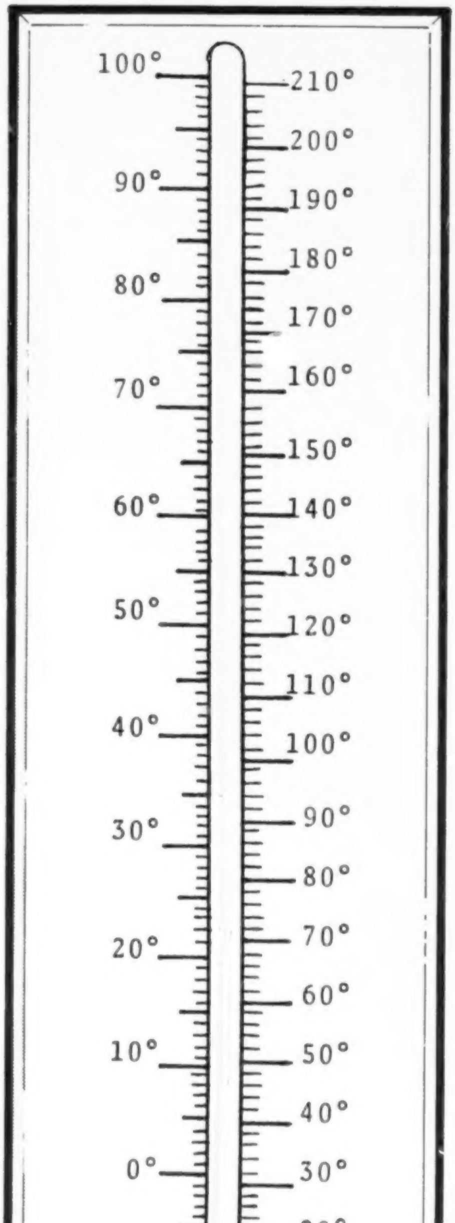
VI. Fahrenheit can be changed to Centigrade.

- A. Subtract 32 from the Fahrenheit degrees.
- B. Multiply the difference by 5.
- C. Divide the product by 9.

Example: Change $86^{\circ}F.$ to degrees C.

$$(86^{\circ} - 32^{\circ}) \times \frac{5}{9} = 30^{\circ}C.$$

TEMPERATURE


100°
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
-10°
-20°
-30°
210°
200°
190°
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
-10°
-20°

TM-29

MEASUREMENT

ACTIVITY SHEET 47--TEMPERATURE

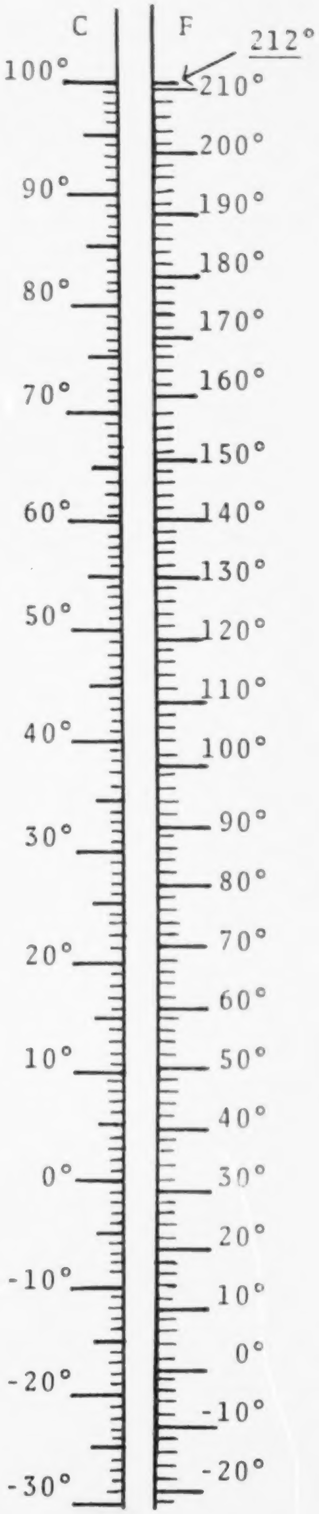
FAHRENHEIT

Use the thermometer provided to find the results.

Original Temperature	Drop	Temperature
45°	31°	14°
14°	20°	1. ______
64°	40°	2. ______
137°	12°	3. ______

Original Temperature	Rise	Temperature
20°	21°	51°
- 10°	16°	4. ______
- 1°	4°	5. ______
- 4°	12°	6. ______

Make up three rises and three drops of your own and add them to each chart.


C
F
212°
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
-10°
-20°
-30°
210°
200°
190°
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
-10°
-20°

CELSIUS

Original temperature 60°C

Add or subtract the changes and see what new temperature you get.

7. Raise 30° = ______________

8. Raise 21° = ______________

9. Lower 6° = ______________

10. Lower 65° = ______________

UNIT IX

MEASUREMENT

ACTIVITY SHEET 48--FAHRENHEIT AND CENTIGRADE

1. If is is 31°F, and the temperature drops 32°, what is the temperature? __________

2. If it is 80°C, and the temperature drops 31°, what is the temperature? __________

3. If it is 40°F, what is the Centigrade temperature? __________

4. If it is 90°C, what is the Fahrenheit temperature? __________

5. (a) Boiling point for Fahrenheit is __________

   (b) Boiling point for Centigrade is __________

6. (a) Freezing point for Fahrenheit is __________

   (b) Freezing point for Centigrade is __________

7. If it is 15°F, what is the Centigrade temperature? __________

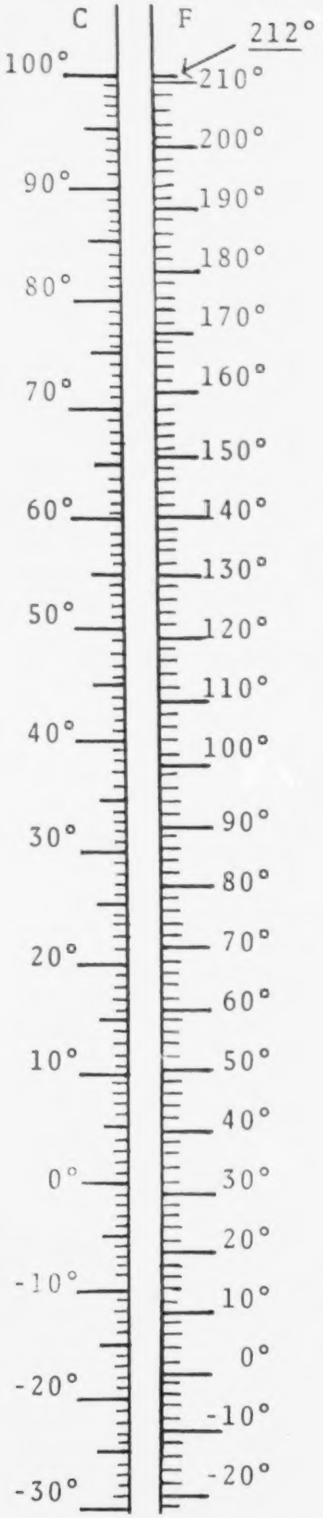
8. Using your thermometer, record the comparisons:

   (a) 20°C = __________F.

   (b) 100°F = __________C.

   (c) 30°C = __________F.

   (d) 32°F = __________C.


C
F
212°
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
-10°
-20°
-30°
210°
200°
190°
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
-10°
-20°

MEASUREMENT

ACTIVITY SHEET 49--TEMPERATURE

Complete the following:

1. Set the thermometer tape so that the reading will be the freezing point on each thermometer. Through how many degrees would you have to move the Centigrade tape to go from the freezing point of water on this scale to the boiling point of water on this scale? __________ This is called the range. What would be the midpoint of this range? __________ Divide the range into 10 equal parts. How many degrees will be in each part? __________

C	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
F	32°										212°

What is the range on the Fahrenheit scale? __________ If you divide this range into 10 equal parts, how many degrees will be in each part? __________ Complete the above chart by filling in the Fahrenheit readings that correspond to each Centigrade reading. Remember: the increase between each division on the Centigrade is 10°; the increase between each division on the Fahrenheit is 18°.

2. Convert 35°C to Fahrenheit.

   a. 35°C is one-half of the way between 30°C and 40°C. Use this fact to find one-half of the way between the corresponding values on the Fahrenheit scale:
   30°C corresponds to __________°F.
   40°C corresponds to __________°F.
   One-half of the way between these two Fahrenheit readings is __________°F.
   30°C corresponds to __________°F.

   b. The Fahrenheit scale increases __________° for every 10° increase of the Centigrade scale. The ratio between the Fahrenheit scale and the Centigrade scale is $\frac{18}{10}$ or $\frac{9}{5}$. The freezing point of water on the Centigrade scale is __________°. The freezing point of water on the Fahrenheit scale is __________°. Look carefully at the two boiling points for water. To obtain the Fahrenheit reading from the Centigrade reading, start by taking $\frac{9}{5}$ of the Centigrade reading. $\frac{9}{5} \times 100° =$ __________°.

   This result does not correspond to the reading on the Fahrenheit scale. Look again at the freezing points of water on each scale and try to decide why taking five-ninths will not give you the desired result. Subtract the result you got for $\frac{9}{5} \times 100$ from 212°. Does this give you an idea? ______

Try your idea out by using it to convert 50°C to Fahrenheit. Did you get 122°? ____________

To convert from Centigrade to Fahrenheit, you use the formula $F = \frac{9}{5} C + 32$.

3. To derive a formula to convert from Fahrenheit to Centigrade, we begin with the formula $F = \frac{9}{5} C + 32$.

   Subtract 32 from both sides: $F = 32 = \frac{9}{5} C$.

   Multiply both sides by $\frac{5}{9}$: $\frac{5}{9}(F - 32) = C$

   If the Fahrenheit reading is 113°, to find the Centigrade reading.

   (1) Subtract 32.

   (2) Take $\frac{5}{9}$ of the difference.

   or, $113^{\circ} - 32^{\circ} = 81^{\circ}$

   $\frac{5}{9}\ (81^{\circ}) = 45^{\circ}$C

   Try the formula for the following conversions:

   a. 40°C = ____________ $^{\circ}$F
   80°C = ____________ $^{\circ}$F
   65°C = ____________ $^{\circ}$F
   35°C = ____________ $^{\circ}$F
   20°C = ____________ $^{\circ}$F
   10°C = ____________ $^{\circ}$F

   b. 77°F = ____________ $^{\circ}$C
   68°F = ____________ $^{\circ}$C
   104°F = ____________ $^{\circ}$C
   131°F = ____________ $^{\circ}$C
   59°F = ____________ $^{\circ}$C
   86°F = ____________ $^{\circ}$C

UNIT IX

MEASUREMENT

UNIT TEST--PART 1

Match the terms with their definitions by placing the correct letter in the blanks at the left.

_____ 1. The distance around a geometric figure

_____ 2. A flat round figure formed by one curved line which joins into a ring shape; all points of the curved line are equal distance from the center point

_____ 3. A figure having four sides of equal length and four right angles

_____ 4. Two lines having the same end point

_____ 5. A four sided figure with two parallel ends of equal lengths and two parallel sides of equal length and no right angles

_____ 6. Closed shapes formed by straight or curved lines

_____ 7. A line which runs up and down

_____ 8. A line which runs left and right

_____ 9. Instrument used to measure an angle

_____10. Figure having three sides and three angles

a. angle

b. circle

c. geometric figures

D. Horizontal line

e. parallelogram

f. perimeter

g. protractor

h. square

i. triangle

j. vertical line

UNIT IX

MEASUREMENT

UNIT TEST--PART 2

Read each of the following questions and answer them in the space provided.

1. In the past, how were objects measured?

2. What was the distance from the elbow to the tip of the fingers called?

3. Why do we need standard measuring devices?

4. What is the base unit of measurement for English standard measuring devices?

5. What measuring instrument is 36 in. long?

6. What measuring instrument is 12 in. long?

7. What measuring instrument would you use to measure a football field?

8. What measuring instrument would you use to measure a sheet of paper?

9. What measuring instrument would you use to measure your waist?

10. Why is it important to use the proper measuring device?

UNIT IX

MEASUREMENT

UNIT TEST--PART 3

A. On the line below, indicate the following divisions of inches:

1. $\frac{1}{2}, \frac{2}{2}$
2. $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}$
3. $\frac{1}{8}, \frac{2}{8}, \frac{3}{8}, \frac{4}{8}, \frac{5}{8}, \frac{6}{8}, \frac{7}{8}, \frac{8}{8}$

B. Change the measures to either larger or smaller units as indicated.

1. 14 ft. = __________ in.
2. 22 ft. = __________ in.
3. 108 in. = __________ ft.
4. 78 in. = __________ft.
5. 16 yds. = __________ in.
6. 450 ft. = __________ yds.

C. Change the following units as indicated.

1. 6.3 cm. = __________ meters
2. 88 mm. = __________ cm.
3. __________ meters = 75 cm.
4. 3.5 meters = __________ cm.

D. Change to pounds and ounces.

1. 54 oz. = __________ lb. __________ oz.
2. 67 oz. = __________ lb. __________ oz.
3. 83 oz. = __________ lb. __________ oz.
4. 79 oz. = __________ lb. __________ oz.

E. Change to milligrams:

1. 2 kg. = __________
2. 3 kg. 4 mg. = __________
3. 17 g. = __________
4. 24 kg. = __________

UNIT IX

MEASUREMENT

UNIT TEST--PART 4

A. How many sides does the rectangle pictured have?

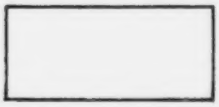
B. How long are the sides?

C. How can you tell a rectangle from a square?

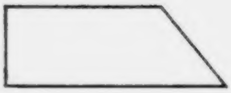
D. Match the correct name to each geometric figure.

Circle
Rectangle
Parallelogram
Rhombus
Square
Trapezoid
Triangle

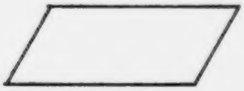
1. ________



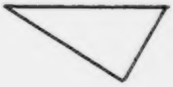
2. ________



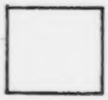
3. ________



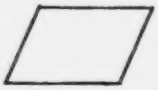
4. ________



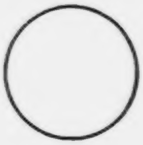
5. ________



6. ________



7. ________



TEST

UNIT IX

MEASUREMENT

UNIT TEST--PART 5

A. Complete the following steps using the points given.

D .   . C

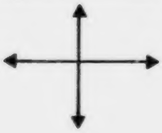
A .   . B

1. Draw a line segment from A to B.
2. Draw a line segment from B to C.
3. Make a mark between 2 points on the figure parallel to segment AB and draw the segment. This mark is between points _____ and _____.
4. Draw a line segment to close the figure. It is from point _____ to point _____. This line segment is parallel to segment __________.

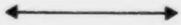
B. Identify the following lines and write in the correct term.

horizontal	perpendicular
oblique	segment
parallel	vertical

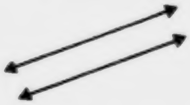
1. __________



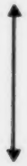
2. __________



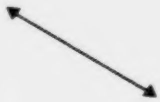
3. __________



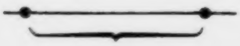
4. __________



5. __________



6. __________



MEASUREMENT

UNIT TEST--PART 6

A. Match the equivalent lengths by drawing lines as shown.

43 mm.
78 mm.
135 mm.
520 mm.
60 mm.

53 cm.
6 cm.
7.8 cm.
13.5 cm.
4.3 cm.

B. Measure each line segment below using the inch scale first and then the centimeter scale of a ruler.

	Inches	Centimeters
1.	______	__________
2.	______	__________
3.	______	__________
4.	______	__________
5.	______	__________

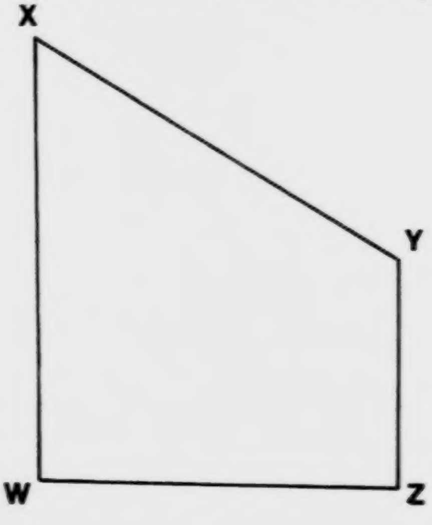
C. Add and simplify:

$$1.\quad \begin{array}{r} 4\text{ lb. } 6\text{ oz.} \\ \underline{+\ 5\text{ lb. } 8\text{ oz.}} \end{array} \qquad 2.\quad \begin{array}{r} 6\text{ lb. } 4\text{ oz.} \\ \underline{+\ 7\text{ lb. } 12\text{ oz.}} \end{array}$$

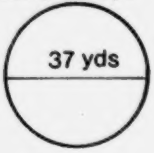
D. Subtract and simplify:

$$1.\quad \begin{array}{r} 5\text{ lb. } 10\text{ oz.} \\ \underline{-\ 4\text{ lb. } 8\text{ oz.}} \end{array} \qquad 2.\quad \begin{array}{r} 11\text{ lb. } 14\text{ oz.} \\ \underline{-\ 3\text{ lb. } 6\text{ oz.}} \end{array}$$

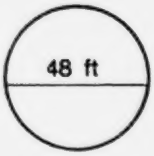
E. Use a protract to measure the angles in the figure below.



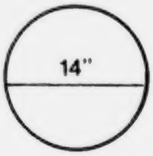
F. Find the circumference of the following circles (round off to nearest hundredths):



1. __________



2. __________



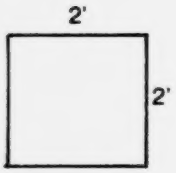
3. __________

G. Find the perimeter of each rectangle.

	Length	Width	Perimeter
1.	12'	11 feet	__________
2.	24 inches	16 inches	__________
3.	8 yards	3 yards	__________
4.	4 feet	3 feet	__________
5.	7 feet	4 feet	__________

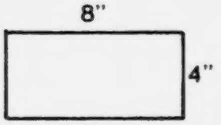
H. Find the area of each of the following:

A = s x s

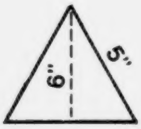


1. _____

A = l x w



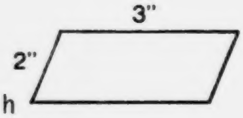
2. _____



A = $\frac{1}{2}$ x b x h

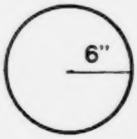
3. _________

A = b x h



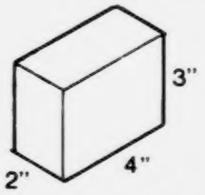
4. _____

A = πr^2

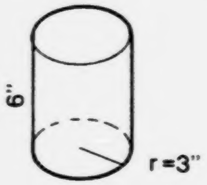


5. ____

I. Find the volume of this rectangle.



J. Find the volume of this cylinder.



UNIT IX

MEASUREMENT

UNIT TEST--PART 7

1. If the temperature was 45° Fahrenheit and it dropped 12°, what would it be? __________

2. If the temperature was 90° Celsius, how many degrees would it have to go up to reach boiling point? __________

3. What is the freezing point on the Celsius scale? __________

4. What is the freezing point on the Fahrenheit scale? __________

5. Change 35° Centigrade to degrees Fahrenheit.

TEST

UNIT X

TIME AND PAY

UNIT OBJECTIVE

After completion of this unit, the student will be able to figure total hours worked and compute gross pay. This knowledge will be evidenced through demonstration and by successfully completing the unit test.

SPECIFIC OBJECTIVES

In completing this unit of instruction, the student will:

1. Identify terms and definitions associated with figuring time and paycheck
2. Identify correct time shown on a clock
3. Identify amount of time between two clocks
4. List beginning and ending time on a time card
5. Determine total numbers of hours worked by use of a time card
6. Determine gross amount of paycheck using hours worked and given rate of wages

UNIT X

TIME AND PAY

NOTES TO THE INSTRUCTOR

I. Objective Sheet

  A. Discuss the unit objective with the students.

  B. Discuss each specific objective with the students.

  C. Have the students complete the objectives in a sequence best suited to your classroom.

  D. Add any objectives necessary to meet fully the needs of the unit and the student.

II. Pre/Post Test

  A. The Pre/Post test may be used to determine students' knowledge of information prior to beginning the unit.

  B. The Pre/Post test is divided into parts to correspond with each Information Sheet.

    1. The student may not need to cover each Information Sheet.

    2. The teacher may use the test to determine the area of information with which the student may need help.

    3. The Pre/Post test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

  A. INFORMATION SHEET 1--TERMS AND DEFINITIONS

    1. Stress to the students the importance of understanding the terms used in working with time and pay.

    2. Use ACTIVITY SHEET 1--TERMS AND DEFINITIONS to reinforce this area of instruction.

  B. INFORMATION SHEET 2--HOW TO TELL TIME

    1. Explain that the hours from 12 midnight to 12 noon are called a.m.

    2. Explain that the hours from 12 noon to 12 midnight are called p.m.

    3. Explain the hands on the clock and what each shows.

    4. Explain the length of a minute.

5. Explain the length of an hour.
6. Explain the length of a day.
7. Explain the numerals and marks on the face of a clock.
8. Show TM-1--THE CLOCK to reinforce this area of instruction.
9. Use the following Activity Sheets to meet fully the objectives of the unit.
   a. ACTIVITY SHEET 2--WHAT TIME IS IT?
   b. ACTIVITY SHEET 3--FIGURING TIME
   c. ACTIVITY SHEET 4--WORD PROBLEMS

C. INFORMATION SHEET 3--FIGURING GROSS PAY

1. Explain what is meant by gross pay.
2. Explain how a time card is used.
3. Explain how minutes are changed to fractions of an hour.
4. Show TM-2--TIME CARD to reinforce this area of instruction.
5. Use the following Activity Sheets to meet fully the objectives of this unit.
   a. ACTIVITY SHEET 5--TIME AND WORK
   b. ACTIVITY SHEET 6--FIGURING GROSS PAY

IV. Answers to Pre/Post Test

A. Answers are based on total information covered in this unit.

B. Right and wrong answers may assist the teacher in discovering individual student weaknesses.

V. Answers to Activity Sheets

A. Some of the Activity Sheets will vary according to training and should be graded individually.

B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

A. The Unit Test is divided into three parts.

1. Each part covers one Information Sheet.
2. Each part uses various methods of testing.

B. Various approaches may be used in testing.

1. Give each part of the test after the student has completed the information in one information area or sheet.

2. Give the entire test upon completion of all the Information and Activity Sheets.

3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

C. Add test parts corresponding to any information areas or sheets added to the unit.

VII. Answers to Unit Tests

A. Answers are based on total information covered in the unit.

B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

Deans, Edwina. Developing Mathematics. New York: American Book Company, 1963.

UNIT X

TIME AND PAY

ANSWERS TO PRE/POST TEST

PART 1

1. b
2. d
3. a
4. c

PART 2

A. 1. 3:00
   2. 7:45

B. 1. 9 hours
   2. 45 minutes

PART 3

A. 1. 8
   2. $2\frac{1}{2}$
   3. $3\frac{1}{2}$
   4. 4
   5. $2\frac{3}{4}$

B. $20\frac{3}{4}$

C. $69.51

UNIT X

TIME AND PAY

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1

1. b
2. e
3. f
4. a
5. d
6. c

ACTIVITY SHEET 2

1. 2:00
2. 11:00
3. 6:00
4. 11:30
5. 5:10
6. 5:00
7. 9:15
8. 10:05
9. 8:00
10. 4:00

ACTIVITY SHEET 3

1. 9 hours
2. 2 hours
3. 10 hours
4. 45 minutes
5. 4 hours, 15 minutes
6. 10 hours, 10 minutes
7. 7 hours
8. 4 hours, 50 minutes

ACTIVITY SHEET 4

1. 20 minutes
2. 7 hours
3. 8 hours
4. 3:00 p.m.
5. 5 hours, 30 minutes
6. 9 hours, 20 minutes
7. 9 hours, 15 minutes
8. 3 hours, 15 minutes
9. 1 hour, 15 minutes
10. 1 hour, 45 minutes

ACTIVITY SHEET 5

Name:					
Day/Date	**In**	**Out**	**In**	**Out**	**Total**
Monday			3:15	5:30	2 hr. 15 min.
Tuesday			2:30	4:45	2 hr. 15 min.
Wednesday			3:15	7:00	3 hr. 45 min
Thursday			2:45	8:30	5 hr. 45 min.
Friday			4:00	5:30	1 hr. 30 min.
Saturday			–	–	0
Sunday			–	–	0
					Total
Weekly					15 hr. 30 min.

ACTIVITY SHEET 6

1. a. $2\frac{1}{4}$ hour
   b. $2\frac{1}{4}$
   c. $3\frac{3}{4}$
   d. $5\frac{3}{4}$
   e. $1\frac{1}{2}$
2. $15\frac{1}{2}$
3. \$51.925 or \$15.93
4. \$62.00

UNIT X

TIME AND PAY

ANSWERS TO UNIT TEST

PART 1

1. f
2. d
3. a
4. b
5. c
6. e

PART 2

A.
1. 5:00
2. 9:15
3. 2:30
4. 2:45

B.
1. 9 hours
2. 45 minutes

C.
1. 7 hours
2. 1 hour, 45 minutes

PART 3

A.
1. 8
2. $2\frac{1}{2}$
3. $3\frac{1}{2}$
4. 4
5. $2\frac{3}{4}$

B. $20\frac{3}{4}$

C. $69.51

UNIT X

TIME AND PAY

PRE/POST TEST

PART 1

Match the terms with their correct definitions by placing the correct letter in the blanks at the left.

_____ 1. a.m.

_____ 2. Hour hand

_____ 3. Minute hand

_____ 4. p.m.

a. the longer hand on a clock which marks the minutes

b. used to show time between 12 midnight and 12 noon

c. used to show time between 12 noon and 12 midnight

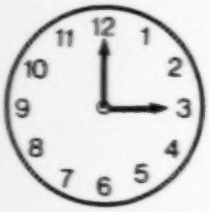
d. the shorter ahnd on a clock which marks the hour

PART 2

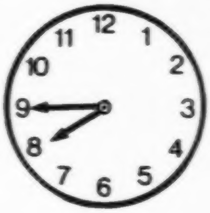
TEST

A. Look carefully at each clock below and write the correct time in the blank.

1.

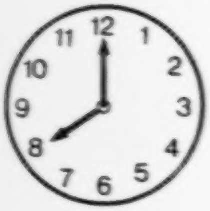


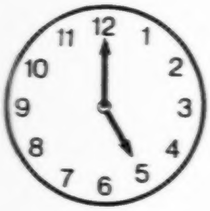
2.



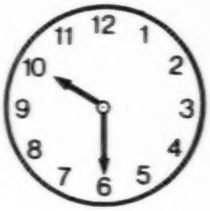
B. Look carefully at each clock and figure the total time passed.

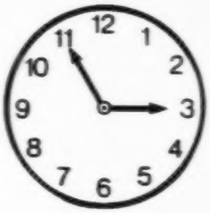
1. a.m. a.m.





2. p.m. p.m.





from to

____ hours ____ minutes

from to

____ hours ____ minutes

934

PART 3

Looking at the time card below, answer the following questions.

Name:					
Day/Date	**In**	**Out**	**In**	**Out**	**Total**
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					
					Total
Weekly					

A. Give the total hours and fractions of an hour using $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$ for hours worked each day.

1. Monday __________
2. Tuesday __________
3. Wednesday __________
4. Thursday __________
5. Friday __________

B. What is the total number of hours worked during the week? __________

C. If you earn $3.35 per hour, what will your gross pay be? $__________

UNIT X

TIME AND PAY

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. a.m.--used to show time between 12 midnight and 12 noon
2. Deductions--money taken out of your gross pay for items such as income tax and social security
3. Hour hand--the shorter hand on a clock which marks the hour
4. Minute hand--the longer hand on a clock which marks the minutes
5. p.m.--used to show time between 12 noon and 12 midnight
6. Time card--a card which you use to record the number of hours you work.

INFORMATION

UNIT X

TIME AND PAY

ACTIVITY SHEET 1--TERMS AND DEFINITIONS

Directions: Match the following terms with their definitions by placing the correct letter in the blanks at the left.

_____ 1. a.m.

_____ 2. Deductions

_____ 3. Hour hand

_____ 4. Minute hand

_____ 5. p.m.

_____ 6. Time card

a. the longer hand on a clock which marks the minutes

b. used to show time between 12 midnight and 12 noon

c. a card which you use to record the numbers of hours you work

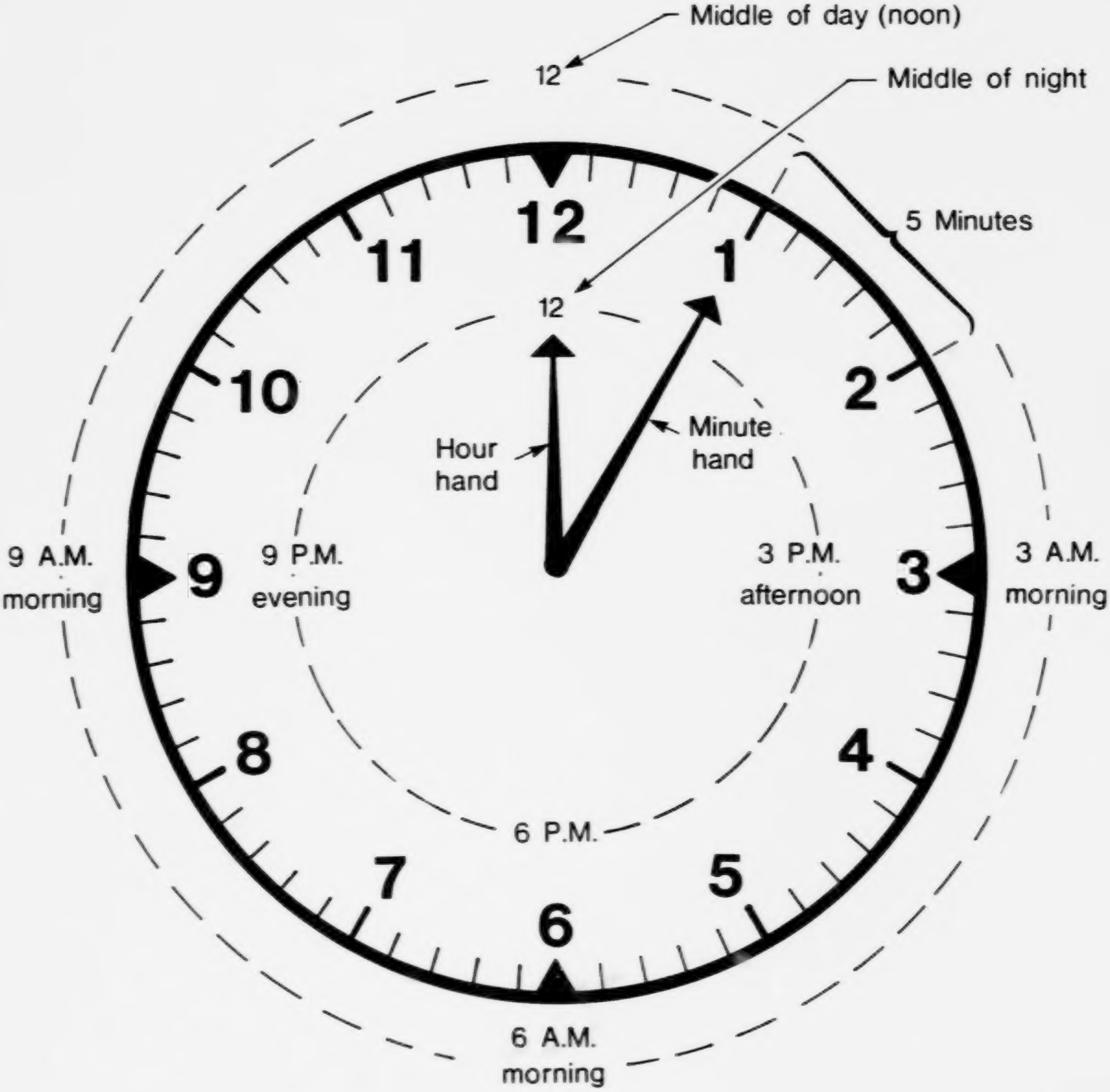
d. used to show time between 12 noon and 12 midnight

e. money taken out of your gross pay for items such as income tax and social security

f. the shorter hand on a clock which marks the hour

ACTIVITY

THE CLOCK


Middle of day (noon)
12
Middle of night
12
5 Minutes
12
11
1
10
2
Hour hand
Minute hand
9 A.M. morning
9
9 P.M. evening
3 P.M. afternoon
3
3 A.M. morning
8
4
6 P.M.
7
5
6
6 A.M. morning

UNIT X

TIME AND PAY

INFORMATION SHEET 2--HOW TO TELL TIME

I. Understanding Day and Night

A. The hours from 12 midnight to 12 noon are called a.m.

B. The hours from 12 noon to 12 midnight are called p.m.

II. Which Hand is Which ?

A. The long hand on the clock shows the minutes.

B. The short hand shows the hours.

C. Each day, the hour hand makes two trips around the clock.

D. It takes the hour hand 12 hours to make one trip around the clock.

III. How Long is an Hour?

A. There are 24 hours in one day.

B. There are 60 minutes in one hour.

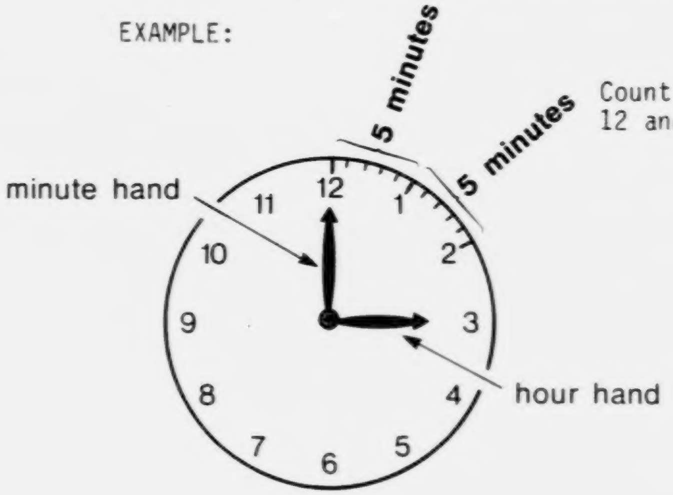
C. There are 60 seconds in one minute.

IV. Hours and Minutes

A. The numerals on the face of the clock tell you the trip of the hour hand.

B. You must figure the numbers for the trip of the minute hand.

EXAMPLE:



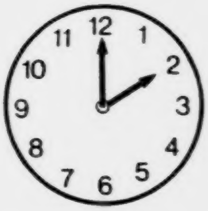
Count the minutes between 12 and 2.

TIME AND PAY

ACTIVITY SHEET 2--WHAT TIME IS IT?

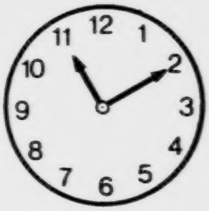
Directions: Look carefully at each clock below and write the correct time in the blank.

1.



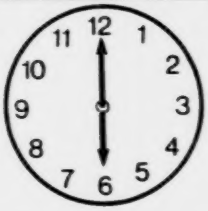
____

2.



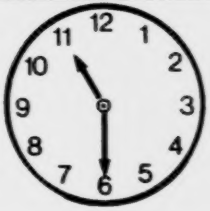
____

3.



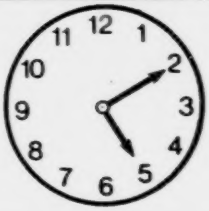
____

4.



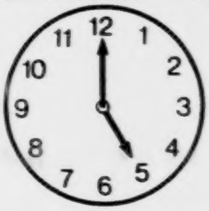
____

5.



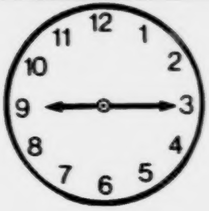
____

6.



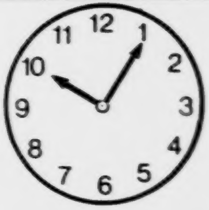
____

7.



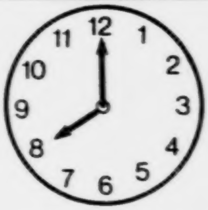
____

8.



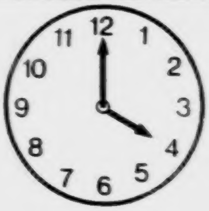
____

9.



____

10.



____

UNIT X

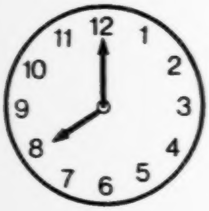
TIME AND PAY

ACTIVITY SHEET 3--FIGURING TIME

Directions: Look carefully at each set of clocks and figure the total time passed.

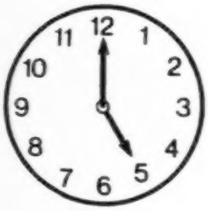
1.

a.m.



from

a.m.

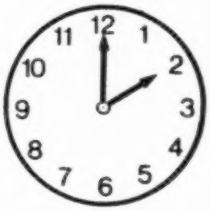


to

____ hours ____ minutes

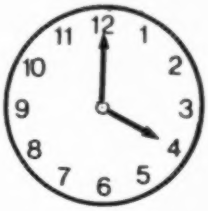
2.

p.m.



from

p.m.

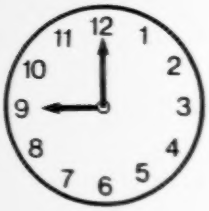


to

____ hours ____ minutes

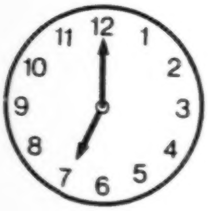
3.

a.m.



from

a.m.

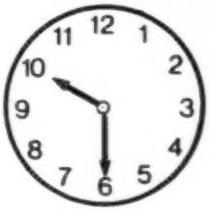


to

____ hours ____ minutes

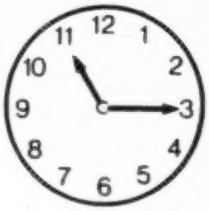
4.

p.m.



from

p.m.

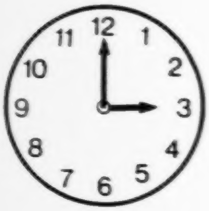


to

____ hours ____ minutes

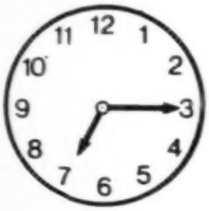
5.

a.m.



from

a.m.

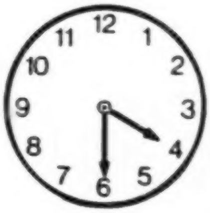


to

____ hours ____ minutes

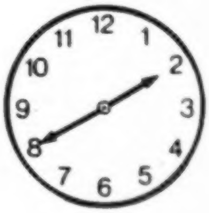
6.

p.m.



from

p.m.

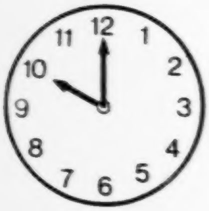


to

____ hours ____ minutes

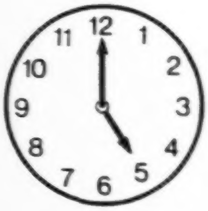
7.

a.m.



from

a.m.

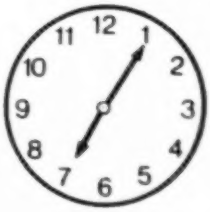


to

____ hours ____ minutes

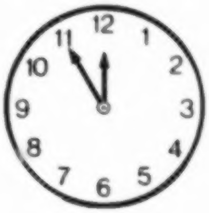
8.

p.m.



from

p.m.



to

____ hours ____ minutes

TIME AND PAY

ACTIVITY SHEET 4--WORD PROBLEMS

Directions: Read each statement and answer the question.

1. Tracy left home for school at 7:45 a.m. and arrived at 8:05 a.m. How long did did it take Tracy to get to school?

2. Bob started working on the science project at 9:00 a.m. on Saturday. He finished the project at 4:00 p.m. How long did it take to complete the project?

3. Elaine arrived at work at 8:30 a.m. and left at 5:30 p.m. She took one hour off for lunch. How many hours did Elaine work?

4. Joe drove from school to work. He arrived at work at 3:15 p.m. It took him 15 minutes to drive the distance. What time did Joe leave school?

5. Marvin arrived at work at 2:15 p.m. and left at 7:45 p.m. How many hours did Marvin work?

6. The car wash began at 7:45 a.m., Saturday. The last car was finished at 5:05 p.m. How long did the car wash last?

____

7. The freshman class left on their annual picnic at 9:00 a.m. Saturday and arrived back at the school at 6:15 p.m. How long was the freshman class gone?

____

8. The football game began at 6:30 p.m. and ended at 9:45 p.m. How long did the game last?

____

9. The band began practice at 3:45 p.m. and finished marching at 5:00 p.m. How long did band practice last?

____

10. The school play started at 7:30 p.m. and was over at 9:15 p.m. How long did the play last?

____

UNIT X

TIME AND PAY

INFORMATION SHEET 3--FIGURING GROSS PAY

I. Gross Pay

   A. Gross pay is the amount of money you earn before any deductions are taken out.

   B. The amount of money you take home will be less than the amount you figure for gross pay.

      1. Your employer will deduct social security.

      2. Your employer will deduct income tax.

II. Figuring Gross Pay

   A. First determine the total number of hours you work each week.

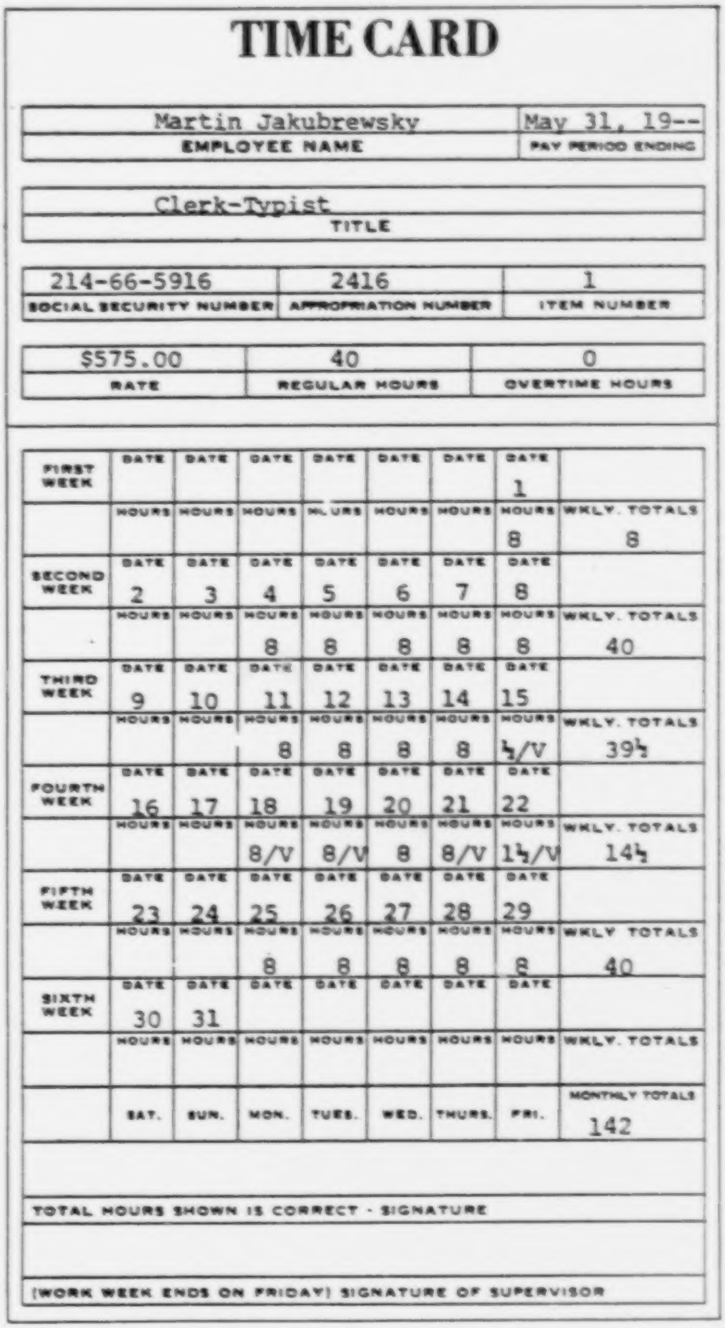
      1. Beginning and ending time should be recorded on your time card.

      2. Total the hours you work each day to find the total number of hours you work each week.

   B. Multiply the number of hours you have worked during the week by the amount of pay you earn each hour.

   EXAMPLE: 10 hours x $3.25 = $32.50

TIME CARD



TIME CARD

Martin Jakubrewsky	May 31, 19--
EMPLOYEE NAME	PAY PERIOD ENDING

Clerk-Typist
TITLE

214-66-5916	2416	1
SOCIAL SECURITY NUMBER	APPROPRIATION NUMBER	ITEM NUMBER

$575.00	40	0
RATE	REGULAR HOURS	OVERTIME HOURS

FIRST WEEK	DATE	DATE	DATE	DATE	DATE	DATE	DATE 1	
	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS 8	WKLY. TOTALS 8
SECOND WEEK	DATE 2	DATE 3	DATE 4	DATE 5	DATE 6	DATE 7	DATE 8	
	HOURS	HOURS	HOURS 8	HOURS 8	HOURS 8	HOURS 8	HOURS 8	WKLY. TOTALS 40
THIRD WEEK	DATE 9	DATE 10	DATE 11	DATE 12	DATE 13	DATE 14	DATE 15	
	HOURS	HOURS	HOURS 8	HOURS 8	HOURS 8	HOURS 8	HOURS ½/V	WKLY. TOTALS 39½
FOURTH WEEK	DATE 16	DATE 17	DATE 18	DATE 19	DATE 20	DATE 21	DATE 22	
	HOURS	HOURS	HOURS 8/V	HOURS 8/V	HOURS 8	HOURS 8/V	HOURS 1½/V	WKLY. TOTALS 14½
FIFTH WEEK	DATE 23	DATE 24	DATE 25	DATE 26	DATE 27	DATE 28	DATE 29	
	HOURS	HOURS	HOURS 8	HOURS 8	HOURS 8	HOURS 8	HOURS 8	WKLY TOTALS 40
SIXTH WEEK	DATE 30	DATE 31	DATE	DATE	DATE	DATE	DATE	
	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	WKLY. TOTALS
	SAT.	SUN.	MON.	TUES.	WED.	THURS.	FRI.	MONTHLY TOTALS 142

TOTAL HOURS SHOWN IS CORRECT - SIGNATURE

(WORK WEEK ENDS ON FRIDAY) SIGNATURE OF SUPERVISOR

UNIT X

TIME AND PAY

ACTIVITY SHEET 5--TIME AND WORK

Directions: Read the situation below. Using the time card provided, record the hours worked each day.

You have just been hired at the new clothing store to begin work on Monday. The manager will allow you to work the hours you like after school. On Monday, you arrived at work at 3:15 p.m. and worked until the store closed at 5:30 p.m. Tuesday, you got out of classes earlier and began working at 2:30 p.m. However, you planned to go to the ball game, so you left work at 4:45 p.m. Wednesday, you arrived at the store at 3:15 p.m. The store stays open late on Wednesdays, so you worked until 7:00 p.m. Thursday, you began work at 2:45 and the manager asked you to stay and assist with the new shipment that arrived that day, so you left work at 8:30 p.m. Due to the late hours Thursday, you did not go into work on Friday unit 4:00 p.m. and left at 5:30 p.m.

ACTIVITY

Name:

Day/Date	In	Out	In	Out	Total
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					
					Total
Weekly					

TIME AND PAY

ACTIVITY SHEET 6--FIGURING GROSS PAY

Directions: Using the time card completed in Activity Sheet 5, answer the following questions.

1. What were the total hours worked on:

   (Change any minutes in your total to the fraction of the hour using $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$)

   a. Monday ________

   b. Tuesday ________

   c. Wednesday ________

   d. Thursday ________

   e. Friday ________

2. What were the total hours worked during the week? ________

3. If you earn $3.35 per hour, what will be the amount of your gross pay?

   $________

4. If you earn $4.00 per hour, what will be the amount of your gross pay?

   $________

ACTIVITY

UNIT X

TIME AND PAY

UNIT TEST--PART 1

Directions: Match the terms with their definitions by placing the correct letter in the blanks at the left.

____ 1. A card which you use to record the number of hours you work

____ 2. The longer hand on a clock which marks the minutes

____ 3. Used to show time between 12 midnight and 12 noon

____ 4. Money taken out of your gross pay for items such as income tax and social security

____ 5. The shorter hand on a clock which marks the hour

____ 6. Used to show time between 12 noon and 12 midnight

a. a.m.

b. deductions

c. hour hand

d. minute hand

e. p.m.

f. time card

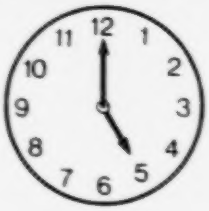
UNIT X

TIME AND PAY

UNIT TEST--PART 2

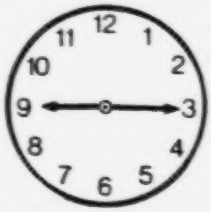
A. Look carefully at each clock below and write the correct time in the blank.

1.



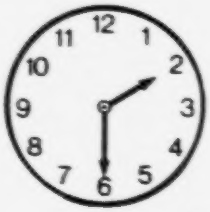
____

2.



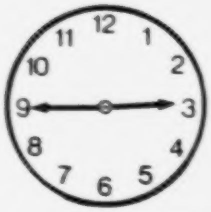
____

3.



____

4.

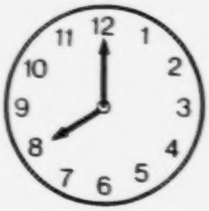


____

B. Look carefully at each set of clocks and figure the total amount of time passed.

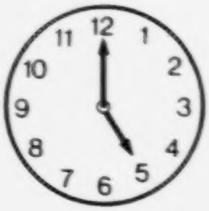
1.

a.m.



from

a.m.

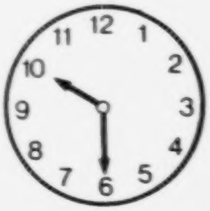


to

____ hours ____ minutes

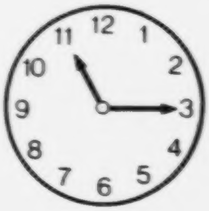
2.

p.m.



from

p.m.



to

____ hours ____ minutes

C. Read each statement and answer the question.

1. Bob started working on his science project at 9:00 a.m. on Saturday. He finished the project at 4:00 p.m. How long did it take to complete the project?

____

2. The school play started at 7:30 p.m. and was over at 9:15 p.m. How long did the play last?

____

UNIT XI

MAKING CHANGE

UNIT OBJECTIVE

After completing this unit of instruction, the student will be able to figure and count change correctly. This will be evidenced through demonstration and by successfully completing the unit test.

SPECIFIC OBJECTIVE

In completing this unit of instruction, the student will:

1. Match terms associated with making change with their correct definitions
2. Discuss the importance of being able to make change correctly
3. Discuss the importance of knowing if you have received the correct change
4. Identify the steps used to make change correctly

UNIT XI

MAKING CHANGE

NOTES TO THE INSTRUCTOR

I. Objective Sheet

   A. Discuss the unit objective with the students.

   B. Discuss each specific objective with the students.

   C. Have the students complete the objectives in a sequence best suited to your classroom.

   D. Add any objectives necessary to meet fully the needs of the unit and the student.

II. Pre/Post Test

   A. The Pre/Post Test may be used to determine students' knowledge of information prior to beginning the unit.

   B. The Pre/Post Test is divided into parts to correspond with each Information Sheet.

      1. The student may not need to cover each Information Sheet.

      2. The teacher may use the test to determine the area of information with which the student may need help.

   C. The Pre/Post Test may be used at the end of the unit to determine comprehensive learning.

III. Information and Activity Sheets

   A. INFORMATION SHEET 1--TERMS AND DEFINITIONS

      1. Stress to the student the importance of understanding the terms used in making change.

      2. Use ACTIVITY SHEET 1--CROSSWORD PUZZLE to reinforce this area of instruction.

   B. INFORMATION SHEET 2--MAKING CHANGE CORRECTLY

      1. Explain the importance of learning to make change correctly.

      2. Explain the importance of knowing if you have received the correct change.

3. Discuss the steps involved in making change.

4. Use the following Activity Sheets to reinforce this area of instruction:

    a. ACTIVITY SHEET 2--MAKING CHANGE

    b. ACTIVITY SHEET 3--GIVING IT ALL IN COINS

    c. ACTIVITY SHEET 4--USING THE FEWEST NUMBER OF COINS

5. Provide each student with copies of the play money. Use play money with at least one of the activities so that the students will be exposed to counting money back to others.

IV. Answers to Pre/Post Test

A. Answers are based on total information covered in the unit.

B. Right and wrong answers may assist the teacher in discovering individual student weaknesses.

V. Answers to Activity Sheets

A. Some of the Activity Sheets will vary according to training and should be graded individually.

B. Some Activity Sheets will not have specific answers but will depend on student participation.

VI. Unit Test

A. The Unit Test is divided into two parts.

1. Each part covers one Information Sheet.

2. Each part uses various methods of testing.

B. Various approaches may be used in testing.

1. Give each part of the test after the student has completed the information in one information area or sheet.

2. Give the entire test upon completion of all the Information and Activity Sheets.

3. Give one or several parts of the test as an additional assignment or to reinforce problem areas of learning.

C. Add test parts corresponding to any information areas or sheets added to the unit.

VII. Answers to Unit Test

A. Answers are based on total information covered in the unit.

B. For convenience of grading, make corresponding answer sheets for additional test parts added.

VIII. References and Resources

A. Basic Life Skills for Cooperative Part-Time Training. Occupational Curriculum Laboratory, East Texas State University, Commerce, Texas, 75428.

B. Cafeteria Occupations: Cashier, Cooperative Part-Time Training. Occupational Curriculum Laboratory, East Texas State University, Commerce, Texas, 75428.

UNIT XI

MAKING CHANGE

ANSWERS TO PRE/POST TEST

PART 1

1. B
2. C
3. A

PART 2

	1¢	5¢	10¢	25¢	50¢	$1.00	$5.00	$10.00	$20.00
1.	3		2		1		1		
2.	2	1		1	1	1			
3.	1		2			2			
4.	3	1		1					
5.	3	1				3			
6.	4	1	2				1		
7.				1	1	4			
8.	2					2			
9.	3	1	1	1	1	1			
10.	3		2	1		3			

UNIT XI

MAKING CHANGE

ANSWERS TO ACTIVITY SHEETS

ACTIVITY SHEET 1

ACROSS

2. Customer
4. Change

DOWN

1. Purchase
2. Cashier
3. Denomination

ACTIVITY SHEET 2

	1¢	5¢	10¢	25¢	50¢	$1.00	$5.00	$10.00
1.	2	1	1	1		1	1	
2.	2		2	1				
3.	4		1	1		4		
4.	1	1	1	1				
5.	2	1	1		1	3		
6.	4		1	1	1	3		
7.	3		1				1	1
8.	2	1		1	1	1	1	
9.	2		2		1	4	1	
10.	4		2		1			
11.	4	1	1	1	1	4		
12.	3					1	1	
13.	1	1			1			1
14.	3	1		1	1	3		
15.	4			1	1			1
16.	1	1		1	1	3		
17.	2	1			1			
18.	3	1		1			1	
19.	1		2			2		
20.	2			1	1		1	
21.	3		2			2		3
22.	2			1				
23.	1		1		1			
24.	2			1		3		
25.	1			1			1	1
26.	1		2		1	1		
27.	3		1			1	1	
28.	3	1	1		1	4		
29.			1	1		1		
30.		1				4		

ACTIVITY SHEET 3

	Pennies	Nickels	Dimes	Quarters	Halves	Ones
I. a.	4				1	2
b.	2			3		4
c.				1		1
d.	2					3
e.	4	1		1	1	
f.	2	1	1	1	1	3

	Pennies	Nickels	Dimes	Quarters	Halves	Ones
II. a.		1				1
b.	2		1	1	1	3
c.			1	1	1	7
d.	1					7

	Pennies	Nickels	Dimes	Quarters	Ones	Fives	Tens
III. a.		1			2		
b.	2		2	2	3		
c.	3		1	3	4		1
d.	1	1		3	1	1	
e.	3		1		2		

ACTIVITY SHEET 4

	Pennies	Nickels	Dimes	Quarters	Halves	Ones
a.			1		1	
b.	3					
c.	3	1				
d.	2		1			
e.		1	1	1		
f.	1	1	1	1		
g.	3	1		1	1	
h.				1		1
i.	3		1	1		1
j.				1	1	3
k.	2	1	1		1	
l.	4		1	1		2
m.			2	1		6
n.	3			1		7
o.	1				1	2
p.	2		1	1	1	3
q.	3		2			4
r.	1	1			1	3
s.	1			1	1	2
t.	4		1	1		1

UNIT XI

MAKING CHANGE

ANSWERS TO UNIT TEST

PART 1

1. c
2. a
3. d
4. e
5. b

PART 2

	1¢	5¢	10¢	25¢	50¢	$1.00	$5.00	$10.00	$20.00
1.	3		2		1		1		
2.	2	1		1	1	1			
3.	1		2			2			
4.	3	1		1					
5.	3	1				3			
6.	4	1					1		
7.				1	1	4			
8.	2					2			
9.	3	1	1	1	1	1			
10.	3		2	1		3			
11.	2			1		1			
12.	4				1	2	1		
13.	4	1	1		1		1		
14.	3		2			1			
15.	2		1		1		1		
16.	3	1	1	1	1	3			
17.	2				1	4			1
18.	1			1	1	3	1		
19.	4	1	1		1	2	1		
20.	4		1	1	1	2			

UNIT XI

MAKING CHANGE

PRE/POST TEST

PART 1

Match the terms with their definitions by placing the correct letter in the blanks at the left.

_____	1. Cashier	a. value or size of a piece of money
_____	2. Change	b. one who is in charge of money
_____	3. Denomination	c. money returned when a payment is more than the amount due

PART 2

In filling out this form, give the least number of coins and bills in change.
Example: $2.36 from $5.00--there would be four .01; one .10; one .50; and two $1.00.

	AMOUNT OF	AMOUNT	DENOMINATIONS IN CHANGE								
	SALE	RECEIVED	1¢	5¢	10¢	25¢	50¢	$1.00	$5.00	$10.00	$20.00
1.	$ 4.27	$ 10.00									
2.	3.18	5.00									
3.	2.79	5.00									
4.	.67	1.00									
5.	1.92	5.00									
6.	4.91	10.00									
7.	15.25	20.00									
8.	7.98	10.00									
9.	13.07	15.00									
10.	6.52	10.00									

TEST

UNIT XI

MAKING CHANGE

INFORMATION SHEET 1--TERMS AND DEFINITIONS

1. Cashier--one who is in charge of money
2. Change--money returned when a payment is more than the amount due
3. Customer--someone who buys a product or service
4. Denomination--value or size of a piece of money
5. Purchase--to obtain by paying money; something obtained for money

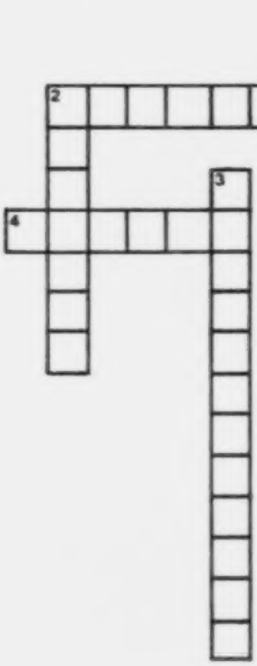
UNIT XI

MAKING CHANGE

ACTIVITY SHEET 1--CROSSWORD PUZZLE

Directions: Complete the definitions using the terms listed. Use words in blanks to complete crossword puzzle.

Cashier
Change
Customer
Denomination
Purchase



ACROSS

2. Someone who buys a product or service is a ______________.

4. ______________ is money returned when a payment is more than the amount due

DOWN

1. When you obtain something by paying money, you ______________ it.

2. The ______________ is one who is in charge of money.

3. The ______________ is the value or size of a piece of money.

ACTIVITY

UNIT XI

MAKING CHANGE

INFORMATION SHEET 2--MAKING CHANGE CORRECTLY

I. Importance of Learning to Make Change Correctly

A. When you are dealing with other people in business, you must know how to make change correctly.

B. If you are working in a business receiving money from customers, you must be accurate in making change in order to keep your job.

II. Importance of Knowing Whether You Are Given the Correct Change

A. When you purchase an item, it is important that you know the amount of change you should receive.

B. When you give the cashier your money, you should pay careful attention when your change is counted back to you.

III. How to Make Correct Change

A. Look at the amount owed.

B. Count the amount of money given to pay for the purchase.

C. Think about the relationship between the two.

EXAMPLE: Amount owed $ 3.55

Amount given $20.00

You would say $ 3.55 out of $20.00

D. Starting with the coins, count to the nearest whole dollar.

EXAMPLE: $3.55 + .10 = $3.65 + .10 = $3.75 + .25 = $4.00

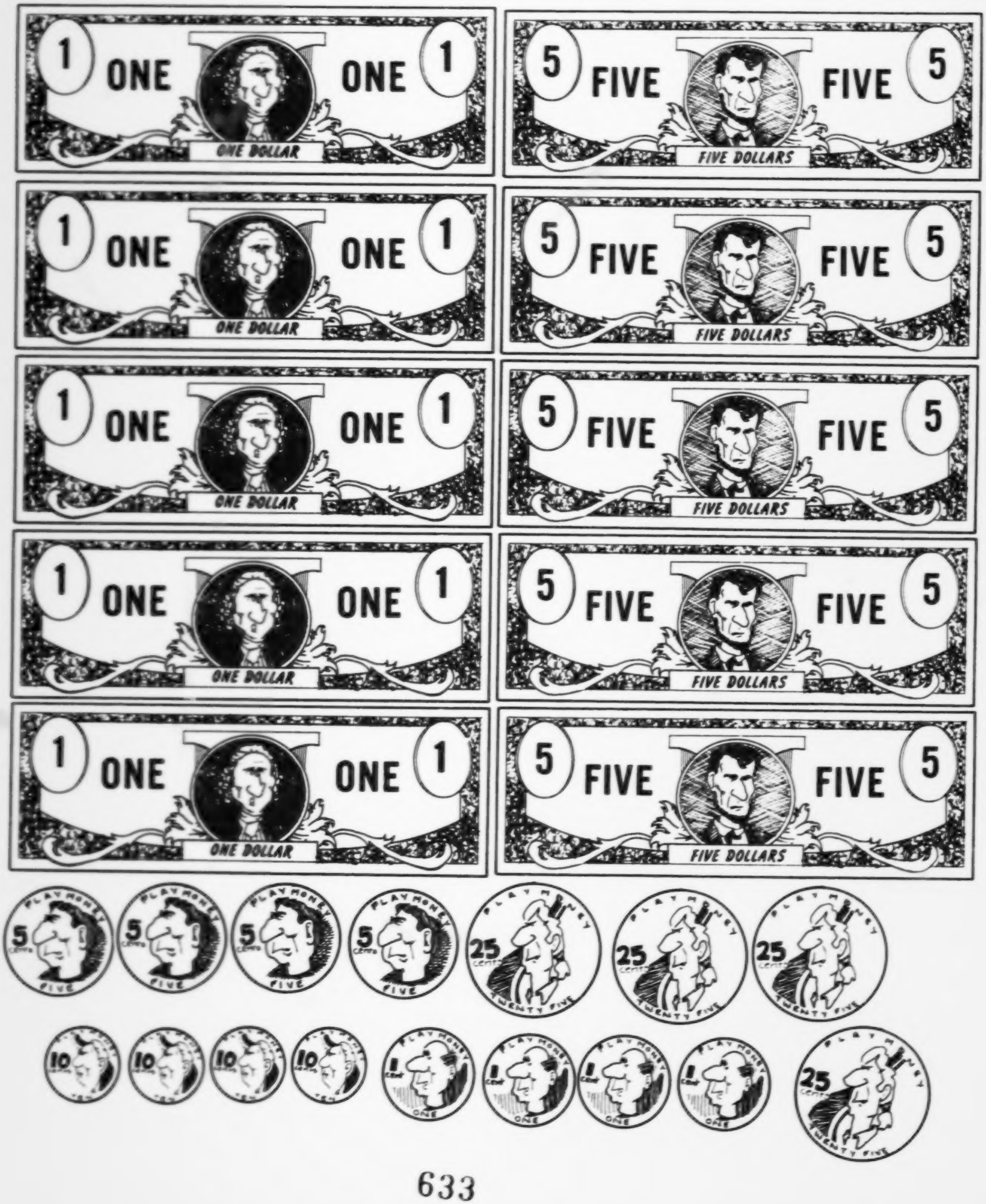
E. You then count to the nearest tenth or to the original dollar amount.

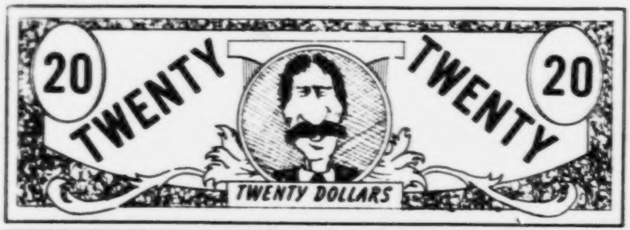
EXAMPLE: $4.00 + $1.00 = $5.00 + $5.00 = $10.00 + $10.00 = $20.00

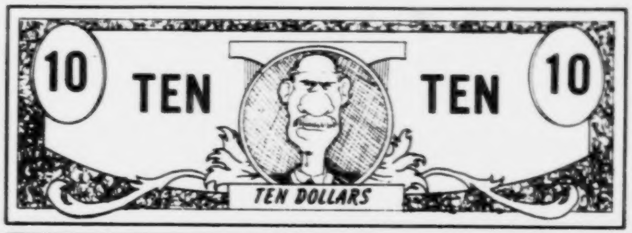
(The correct change would be $16.45.)

F. When you are giving change, use the fewest number of coins and bills possible.

PLAY MONEY


1 ONE ONE 1
ONE DOLLAR
5 FIVE FIVE 5
FIVE DOLLARS
PLAY MONEY
5 CENTS
FIVE
25 CENTS
TWENTY FIVE
10
TEN
1 CENT
ONE


20
TWENTY
TWENTY
20
TWENTY DOLLARS


10
TEN
TEN
10
TEN DOLLARS

20
TWENTY
TWENTY
20
TWENTY DOLLARS

10
TEN
TEN
10
TEN DOLLARS

20
TWENTY
TWENTY
20
TWENTY DOLLARS

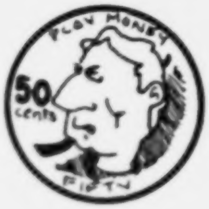
10
TEN
TEN
10
TEN DOLLARS

20
TWENTY
TWENTY
20
TWENTY DOLLARS

10
TEN
TEN
10
TEN DOLLARS

20
TWENTY
TWENTY
20
TWENTY DOLLARS

10
TEN
TEN
10
TEN DOLLARS


PLAY MONEY
50 cents
FIFTY

PLAY MONEY
50 cents
FIFTY

PLAY MONEY
50 cents
FIFTY

PLAY MONEY
50 cents
FIFTY

PLAY MONEY
50 cents
FIFTY

UNIT XI

MAKING CHANGE

ACTIVITY SHEET 2--MAKING CHANGE

Directions: In filling out this form, give the least number of coins and bills in the change. Example: $1.57 from $5.00; there would be three .01; one .05; one .10; one .25; and three $1.00.

AMOUNT OF SALE	AMOUNT RECEIVED	DENOMINATIONS OF CHANGE							
		1¢	5¢	10¢	25¢	50¢	$1.00	$5.00	$10.00
1. $ 3.58	$ 10.00								
2. .53	1.00								
3. .61	5.00								
4. .59	1.00								
5. 1.33	5.00								
6. 1.11	5.00								
7. 4.87	20.00								
8. 13.18	20.00								
9. .28	10.00								
10. 4.26	5.00								
11. 15.06	20.00								
12. 13.97	20.00								
13. 29.44	40.00								
14. 21.17	25.00								
15. 39.21	50.00								
16. 16.19	20.00								
17. 9.43	10.00								
18. 14.67	20.00								
19. 2.79	5.00								
20. 4.23	10.00								
21. 17.77	50.00								
22. .23	.50								
23. 1.39	2.00								
24. 6.73	10.00								
25. 34.74	50.00								
26. 3.29	5.00								
27. 93.87	100.00								
28. 30.32	35.00								
29. 113.65	115.00								
30. 65.95	70.00								

ACTIVITY

UNIT XI

MAKING CHANGE

ACTIVITY SHEET 3--GIVING IT ALL IN COINS

I. Count the change from a 5 dollar bill. Use the least number of coins possible.

	COST	CHANGE					
		Pennies	Nickels	Dimes	Quarters	Halves	Ones
a.	$2.46	4				1	2
b.	.23						
c.	3.75						
d.	1.98						
e.	4.16						
f.	1.08						

II. Count the change from a 10 dollar bill, using the least number of coins possible.

	COST	CHANGE					
		Pennies	Nickels	Dimes	Quarters	Halves	Ones
a.	$8.95						
b.	6.13						
c.	2.15						
d.	2.99						

III. Count the change from payments listed. Use the least number of coins possible. (We are out of half-dollars.)

	COST	PAYMENT	CHANGE						
			Pennies	Nickels	Dimes	Quarters	Ones	Fives	Tens
a.	$ 7.95	$10.00							
b.	16.28	20.00							
c.	5.12	20.00							
d.	3.19	10.00							
e.	27.87	30.00							

UNIT XI

MAKING CHANGE

ACTIVITY SHEET 4--USING THE FEWEST NUMBER OF COINS

Directions: Use as few coins as possible to pay each amount.

		COINS TO USE					
	PAY THIS AMOUNT	Pennies	Nickels	Dimes	Quarters	Halves	Ones
a.	60¢						
b.	3¢						
c.	8¢						
d.	12¢						
e.	40¢						
f.	41¢						
g.	83¢						
h.	$1.25						
i.	1.38						
j.	3.75						
k.	67¢						
l.	$2.39						
m.	6.45						
n.	7.28						
o.	2.51						
p.	3.87						
q.	4.23						
r.	3.56						
s.	2.76						
t.	1.39						

UNIT XI

MAKING CHANGE

UNIT TEST--PART 1

Directions: Match the terms with their definitions by placing the correct letter in the blanks at the left.

_____ 1. Cashier

_____ 2. Change

_____ 3. Customer

_____ 4. Denomination

_____ 5. Purchase

a. money returned when a payment is more then the amount due

b. to obtain by paying money; something obtained for money

c. one who is in charge of money

d. someone who buys a product or service

e. value or size of a piece of money

TEST

UNIT XI

MAKING CHANGE

UNIT TEST--PART 2

In filling out this form, give the least number of coins and bills in change. Example: $2.36 from $5.00--there would be four .01; one .10; one .50; and two $1.00.

	AMOUNT OF	AMOUNT	DENOMINATIONS IN CHANGE								
	SALE	RECEIVED	1¢	5¢	10¢	25¢	50¢	$1.00	$5.00	$10.00	$20.00
1.	$ 4.27	$ 10.00									
2.	3.18	5.00									
3.	2.79	5.00									
4.	.67	1.00									
5.	1.92	5.00									
6.	4.91	10.00									
7.	15.25	20.00									
8.	7.98	10.00									
9.	13.07	15.00									
10.	6.52	10.00									
11.	8.73	10.00									
12.	12.46	20.00									
13.	4.31	10.00									
14.	18.77	20.00									
15.	24.38	30.00									
16.	11.07	15.00									
17.	75.48	100.00									
18.	11.24	20.00									
19.	92.31	100.00									
20.	17.11	20.00									

TEST